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Reducing Racial and Gender Implicit Biases: The Effects of Multicultural Education on a Child’s Preferences and Occupational Aspirations

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Reducing Racial and Gender Implicit Biases:
The Effects of Multicultural Education on a Child’s Preferences and Occupational Aspirations

An Honors Thesis Presented by

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This project explored the effect of reducing implicit racial and gender bias and the impact on children’s occupational preferences and aspirations. Participants included fifty-two children aged three, four, and five years old from the Connecticut College Children’s Program in New London, Connecticut. The initial hypothesis theorized that children, regardless of race and gender, would have a preference towards White and male individuals as being “good or nice,” and for most occupational roles. The children would also have a prejudice against individuals of color as being “naughty or bad,” and for most occupational roles. The other hypothesis theorized that after children received multicultural occupational literature intervention, their implicit biases would decrease, especially for children of color, female children, and three year old children. The results of this study showed that the children who received multicultural occupational literature intervention reduced their negative implicit biases and caused them to increase their occupational preferences for themselves and others, in comparison to the children who did not receive the literature intervention. Ultimately, this study expresses the effect that early multicultural literature can have on positively impacting racial and gender attitudes in young children.

*Key words:* Implicit Bias, Prejudice, Multicultural Education, Racial and Gender Identity Development
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Reducing Racial and Gender Implicit Biases: The Effects on a Child’s Preferences and Occupational Aspirations

For decades, researchers have been interested in the concept of children’s racial and gender preferences and prejudices. According to scholar Connolly (2002), until the mid 1980s, there was “very little work sought to engage young children in any meaningful way” (p. 3). Recently, there have been more psychological studies conducted to uncover the processes and reasons for which children develop and form their racial and gender prejudices. There have been two main types of tests for these studies: attitudinal tests include forming conclusions based on the child’s racial attitudes towards a doll or image and somatic analysis includes forming conclusions of a child’s racial preferences based on the ethnic background of their friends (Connolly, 2002). Multiple scholars have found evidence to suggest that “children as young as three years of age are aware of society’s major social categories: gender and ethnicity” (Brown, 2011, p. 141). Although many studies have explored the ways in which children develop and express their racial and gender biases, there has been little research, to date, regarding methods to reverse these biases once they have formed, or to prevent them from forming altogether.

This paper will first address the findings from prior racial and gender studies. The current study will build upon the previous studies by analyzing children’s implicit racial and gender biases and the effects they have on their occupational preferences. It also provides a method to reduce the children’s implicit biases. The study focuses on a diverse group of preschoolers aged three to five at the Connecticut College Children’s Program in New London, Connecticut. The method to reduce biases includes reading multicultural occupational literature to provide positive messages regarding race and gender within multiple occupational fields.
Racial Identity Development

Some scholars believe in the idea of a tabula rasa where children begin life as a blank slate and are later influenced by adult ideas and social categories (Brown, 2011). However, there is some evidence to suggest that racial identity development begins right after birth. Studies have proven that “even infants of a few months are capable of categorical distinctions among human stimuli” (Brown, 2011, p. 11). In the study conducted by Kelly and colleagues (2005), they observed that after having three months old infants look at pictures of faces, both the Caucasian and Asian infants had a clear preference for their own ethnicity group (Brown, 2011).

According to scholar Piaget (1954), children from ages three to four do not learn to classify racial categories until they enter into the preoperational stage. In this developmental stage, children learn to classify categories, such as the group of people to which they belong (Brown, 2011). However, Piaget found that most children “were not able to categorize by two variables simultaneously and would often overgeneralize” (Phinney and Rotheram, 1986, p. 62). Therefore, children would use mental shortcuts that were often based entirely on social stereotypes (Phinney and Rotheram, 1986).

Piaget stated that from ages five to seven, children begin to form an egocentric perspective, and their social orientation changes to form a strong preference of their ingroup and a dislike of their unfamiliar outgroup (Brown, 2011). A study conducted by Yee and Brown (1988) supports Piaget's theory of categorization. In their study, they asked children, aged three to nine years old, to sort photographs by gender, ethnicity, and hair color (Brown, 2011). They found that by age five, ethnicity was found to be the primary category in which children would define and sort the photographs (Brown, 2011).
Another scholar Derman-Sparks (2010), theorized that from ages two to three, children become observant of physical characteristics and cultural behaviors and therefore, may become fearful of others who have different physical characteristics and skin colors from their own. Derman-Sparks (2010), claimed that from ages four to five, children begin to classify people by these physical characteristics. Children become “more aware of social norms and stereotypes and may unconsciously begin to define others by them” (Derman-Sparks, 2010, p. 431).

As children age, they may also acquire racial prejudice through socialization from their parents and peer group (Brown, 2011). According to scholars Phinney & Rotheram (1986), “parents pass on to children, not only a language, customs, and rituals, but also implicit assumptions regarding the nature of social relationships and the role that the child must fulfill” (p. 201). Without proper education, these influences of racial stereotypes and prejudices from society and parents can be detrimental to the development of a child.

Another study examined the racial development of biracial and bicultural children who identify with two or more ethnic groups. The results found that, while many of the children accepted both of their ethnic group identities, some children identified greater with one group over the other (Phinney & Rotheram, 1986). Specifically, children tended to identify more with the socially dominant group, such as defining themselves as racially White. When identifying themselves, some of the biracial children even selected the face or doll with the lighter skin color due to their socialized positive association with that group (Phinney & Rotheram, 1986).

However, bicultural children, who were raised in families that promoted positive messages for both of their groups, were more likely to have a positive association with both groups, and therefore would develop a more well-rounded sense of identity (Phinney & Rotheram, 1986).
Gender Identity Development

Lawrence Kohlberg (1976), theorized that at ages three to four, children begin “gender labeling” and can label the differences between boys and girls (Kostelnik, Soderman, Phipps Whiren, & Rupiper, 2017). During this stage, children become preoccupied with self-identification, and therefore, begin to define labels as either similar to themselves or as other. A study conducted by Thompson (1975) supports this theory of gender labeling. Thompson found that over seventy-five percent of the two year olds could correctly classify photographs into male and female and by age three this rose to ninety percent (Brown, 2011).

Scholar Shaffer (2008) argued that during ages three to six, children begin gender stereotyping their interests, activities, and occupations. At this age, children will also engage in gender-type play (Shaffer, 2008). Children also learn to play out common societal roles which helps them to form their opinion of their own gender identity in society. Albert Bandura (1961) theorized that children develop their gendered behavior through observational or social learning. Bandura defined observational learning as behavior learned from the environment (Bandura, Ross, & Ross, 1961). An example of this is when children pretend to play house and the female children take on the stereotypical role of the mother by taking care of a baby doll and pretending to clean or cook, and the male children pretend to go off to work.

According to Hughes (2010), in the first eighteen to twenty-four months, there are no apparent gender differences in play, but after children establish their gender identity, the nature of their play changes. By ages two to five, it is clear that the children can distinguish between male and female genders, as well as having established their own gender identity (Hughes, 2010). These gender differences are also reinforced through social learning from parents, the
media, toy manufacturers, and peers (Hughes, 2010). Almost all theorists would agree that children are very aware of “socially defined behaviors and attitudes associated with being male or female” and they express their awareness through their “gender doing” (Kostelnik, et. al., 2017, p. 425).

**Racism & Prejudice**

As children develop their racial and gender identity, they may experience racism and prejudice. Racism is defined as “discriminatory behavior that is backed by institutional power” (Mio, Barker, & Domenech, 2016, p. 179). Acts of racism could include anything from negative or derogatory comments to physical violence from a group that is the social majority. These acts could severely damage a young child’s self esteem and cause them to believe their self worth is less than that of other children.

Some children may also experience prejudice, a lesser, but still extremely influential, form of racism. Prejudice is defined as “negative judgement about a group or its members based upon their categorization” (Mio, et. al., 2016, p. 179). These judgements are usually based on inaccurate stereotypes or generalizations about a group within society. For young children, it is easy to form prejudices towards groups they are unfamiliar with due to a lack of personal knowledge regarding that group. For example, studies have shown that White children typically hold negative attitudes towards other groups from four years of age yet, as they become more familiar with other children of these ethnic groups, their negative attitudes begin to decrease (Phinney & Rotheram, 1986). This shows that it is possible for children to reduce their prejudice attitudes just by forming positive relationships with individuals of a different group.

**Implicit Bias & In-group Bias**
Other children may experience either explicit or implicit bias towards individuals of minoritized groups. Explicit bias is the conscious and outwardly spoken disliking of a group of individuals, while implicit bias comes from unconscious negative feelings that may be influenced by social stereotypes (Greenwald, & Krieger, 2006). Implicit bias can be very problematic because it can lead to “behavior that diverges from a person's avowed or endorsed beliefs or principles” (Greenwald, & Krieger, 2006, p. 951). Scholar Nesdale suggested that bias in children depends on how strongly they identify with their ingroup (Brown, 2011). This phenomenon is known as ingroup bias, or “favoritism toward groups to which one belongs” (Greenwald, & Krieger, 2006, p. 951). If a child is only familiar with their own racial or gender group and has no contact with outside social groups, they may unconsciously become fearful of others who look and act differently than individuals in their ingroup.

Scholars McGlothlin and Killin (2006) conducted a study that observed children’s implicit bias. The scholars presented White children aged seven to ten with pictures of different scenarios that depicted children of varied ethnicities. McGlothlin and Killen found that in the scenarios where the ‘perpetrator’ was Black and the ‘victim’ was White, the children interpreted them to be more negative (Brown, 2011, p. 127). These observations show that children had an implicit bias against the children of color and a preference for their own racial ingroup.

Internalized Racism & Stereotype Threat

When children of color and children from a minoritized group begin to believe negative stereotypes, they may experience internalized racism. Scholar Connolly (1998) argued that internalized racism “not only guides the way people think about themselves and others, but also, in turn, comes to influence and shape their actions and behavior” (Connolly, 1998, p. 11).
Internalized racism can worsen and negatively influence a child’s self-esteem and self-worth. Children may also experience stereotype threat which is defined as “a fear that one will confirm the negative stereotype of a group to which one belongs in an area in which the individual excels” (Mio, et. al., 2016). This fear children have of becoming a stereotype could prevent them from succeeding in many areas of life, including school and the workforce.

One study conducted by Connolly (2002) explored the effects of bias from teachers and how that caused students of color aged five and six to experience stereotype threat in school. In his study, Connolly (2002) found that the teachers had both racial and gender biases. The teachers expressed racial bias through explicit comments such as referring to Black boys as “troublesome and presenting behavioral problems” and referring to Black girls as “disruptive, musical and athletic” (Connolly, 2002, p. 157). Black boys, in particular, were also more often singled out for their behavior than all of the other students. The teachers also expressed gender bias by encouraging the female students to engage in creative work such as writing or drawing and encouraging the boys to do more practical work on the computer (Connolly, 2002). This bias was extremely problematic to the children because it caused them to experience the phenomenon of a stereotype threat. The male children of color were aware that their teacher saw them as bad and gave them unfair treatment, and thus they began to believe that they were ‘less able’ and were more likely to perform poorly in school (Connolly, 2002, p. 17). Educational biases such as the ones found in this study are extremely common in schools around the country, and are negatively impacting the affected students’ academic performance.

**Previous Racial Studies**

One of the first scientific studies regarding racial perceptions in children was conducted
by Doctors Henry and Mamie Clark in 1941-1954. The Clarks were African-American psychologists who studied internalized racism in African-American children. In their study, they presented dolls of different races and asked children, aged three to seven, questions including, identifying which doll they looked like, which doll they thought was the good, bad, pretty and ugly doll, and which doll they preferred. The Clarks found that almost all of the children of color identified looking like the doll of color, yet they still preferred the White doll as the nice, pretty, and smart doll (Clark & Clark, 1947). The Clarks theorized that some of the children had internalized the negative stereotypes that Black is bad and ugly (Clark & Clark, 1947). This study was influential in the 1954 Supreme Court decision of Brown v. Board of Education of Topeka, which called for the integration of all schools (Clark & Clark, 1947). The Court in the Brown case held that segregation generates a feeling of inferiority for the African-American children, and made a unanimous call for desegregation of all schools.

In 2005, Kiri Davis recreated the famous Clark study to see if these prejudices still existed years later. In her study entitled “Girl Like Me,” she asked the children the same questions including which doll is bad, ugly, nice, pretty, and which looks the most like you. Davis found that fifteen out of the twenty-one Black children preferred the White doll even though they identified themselves as looking like the Black doll. This data showed that there were still strong racial preferences almost sixty-five years later (Davis, 2009).

The Clark Doll Test was once again recreated in 2010 by Margaret Beale Spencer, Anderson Cooper, and CNN. The team tested the implicit bias of 133 children of different races by having them point to a cartoon skin-tone spectrum, instead of dolls. Spencer asked the children the same questions including which face is bad, good, ugly, pretty, naughty, and nice
(Cooper, 2010). The team found that the children still had racial biases toward the Black faces and that there were no differences in the answers from children aged five to ten (Cooper, 2010). Also, although most children gave seemingly nonracial reasons for their preferences, such as “he/she is nice or looks friendly,” their responses may have reflected a degree of “same-race preference” because they could have selected skin-tones that resembled friends or family members (Phinney and Rotheram, 1986, p. 65).

Within all of these studies, there was an overwhelming internalized racial bias from the children of color towards the dolls and images that resembled themselves. However, Swanson and Cunningham (2009) found that the preschool children who did not choose the White doll or image as the more positive one had adults providing significant reinforcement towards positive Black imagery. They claimed that children whose parents and school systems positively socialized them regarding racial history and values reported higher self-esteem and racial attitudes (Swanson & Cunningham, 2009). Children who do not receive this racial support would more likely have lower racial attitudes, self-esteem and even lower achievement rates.

**Previous Gender Occupational Studies**

One of the first scientific studies regarding gender occupational perceptions of children was conducted by scholars Shepard and Hess (1975). These scholars presented a list of forty-three adult occupations and asked the kindergarten, eighth grade, and adult participants if the occupation should be performed by a male, female, or either. An important finding from this study was that participants from both sexes chose females for traditional occupations, but the female participants were more willing than the male participants to choose household and child-caring tasks for both sexes (Shepherd & Hess, 1975). This finding shows that females may
be more susceptible than males to a changing occupational demographic.

This study was re-tested again in 1982 by scholars Zuckerman & Sayre. In their study, they interviewed middle class children aged four to eight regarding their sex-role attitudes towards careers. They found that of the fourteen occupations they presented, only two were considered stereotypic; a soldier for a man and a nurse for a women (Zuckerman & Sayre, 1982). However, although the children expressed non stereotypical views towards the occupations, they did choose traditional careers for themselves. Examples for the girls included nurse (52%), teacher (16%), dancer (8%), and veterinarian (8%), and for the boys, athlete (22%), fireman (17%), police officer (17%), and truck driver (11%) (Zuckerman & Sayre, 1982). In contrast to the study conducted by Shepherd & Hess (1975), none of the girls choose mother or wife as their career, which showed they had a more modern attitude towards women in the workforce.

Repetti (1984) conducted a similar study to see if parents and television were influential in the children’s sex-based occupational preferences. She interviewed children aged five and a half to seven and a half years old and asked them about sixteen adult occupations. Repetti (1984) found that the answers from the children in her study were less stereotypic than those reported by Shepard & Hess (1975), but more stereopic than those reported by Zuckerman & Sayre (1982). The children’s answers were compared with their parents Bem Sex-Role Inventory score and the amount of television the children watched. Repretti (1984) found that “there was a relationship between parental attitudes and children tendency to gender stereotype occupational choices” (p. 133). However, there was no relationship between the “amount of television watched and their tendency to sex type occupations” (Repretti, 1984, p. 460). This finding proved that parents were the most influential towards the children’s gendered occupational preferences.
One of the most recent occupational studies conducted by Weisgram, Bigler, & Liben (2010) measured children’s, ages five to ten years old, perceived value of occupations. They found that masculine jobs received higher money and power ratings, while feminine jobs received higher family and altruism ratings. These results remained consistent to the former studies regarding the stereotypical gender-biased attitudes towards certain occupations in society.

Racial and Gender Studies Outcomes

The overall consensus from the studies was that children are socialized at a very young age to perceive race and gender in a certain way. This is specifically detrimental for the development of children of color who are “socialized in a Europeanized context” and are constantly reminded of negative stereotypes of their group (Phinney & Rotheram, 1986, p. 108). Similarly, scholars argue that the dominant groups values and attitudes do not benefit the developmental needs of children from other backgrounds (Phinney & Rotherham, 1986).

However, one recent solution has been to provide multicultural education programs in schools to promote ethnic diversity and interethnic relations (Phinney & Rotherham, 1986). Scholar Ruth Barnhard (1983), also argues that “more emphasis should be placed on career education within the school curriculum because children learn quite early what occupational roles society expects of men and women” (p. 169). Positive career education can motivate children to become anything they want to be when they grow up, regardless of their race or gender.

The Present Study

The purpose of the present study was to examine the effects that both multicultural and occupational literature have on reducing the children’s implicit racial and gender biases. The motivation for the present study came after learning about the results from the Clark Doll Test
(1947), the Girl Like Me Study (2005), and the CNN Study (2010), which all found that children of different ages and races have a negative implicit bias towards individuals of color. The researcher questioned that if children already had a bias for the way they think others perceive them, then would these perceptions affect their choices for their future occupational aspirations.

The current study is an expansion on these previous studies in three ways. The first guiding question tested if children, as young as ages three to five years old, had implicit negative biases towards non-White individuals and women. The second guiding question tested if these biases impacted their perceptions of adult occupations, as well as their own preferred future occupation. The third guiding question tested if reading books which showed individuals of color and women, in multiple occupations, would cause children’s implicit bias to reduce, and thereby cause them to see that all individuals are good and that they can do any job they want.

For the study, twenty books were read that focus on fourteen different occupations and influential leaders in multiple occupational fields. All of the books portray individuals of different races and genders working together in a positive manner. The books were chosen to specifically portray main characters of color and women because they are often left out of most occupational roles in mainstream media, television shows, movies, and books. The purpose of these books was to allow the children to see themselves in all of these occupational roles.

There were seven initial hypotheses established. The first hypothesis was that before the literature exposure, most of the children, regardless of race and gender, would have a preference for White individuals, and male individuals for being “good or nice,” and for many occupational roles, based on their implicit bias and exposure to mainstream media.

The second hypothesis was that before the literature exposure, most of the children,
regardless of race and gender, would have a prejudice against individuals of color for being “naughty or bad,” and for many occupational roles, based on their implicit bias and exposure to mainstream media. The third hypothesis was that the more exposure a child experiences towards individuals of different genders and races in occupational roles, the more their implicit biases towards individuals will decrease and the more they will see all of the faces as good and for more occupations. The fourth hypothesis was that a child age three will be more susceptible to changing their biases because they have not been as conditioned to have biases for individuals of other races and genders. The fifth hypothesis was that a child of color will be more susceptible to changing their biases because they are from the nondominant group. The sixth hypothesis was that a female child will be more susceptible to changing their biases because they are from the nondominant group. The seventh hypothesis was that the more literature exposure a child experiences towards individuals of different genders and races in occupational roles, the more the child will acknowledge that they can do their aspired occupation.

Method

Research Design

This study included an analysis of a quantitative survey given as a pre-test and a post-test (see Appendix A). The researcher orally asked the survey questions and presented the participants with visual cards of the occupations (see Appendix B). The children pointed their responses on a skin-tone face spectrum card (see Appendix C). The researcher recorded the face(s) selections on the data sheet, as well as their verbal responses to each question. The explicit responses were qualitatively scored based on common patterns that arose.
Participants

There were 52 children participants in the study from the Connecticut College Children’s Program. Among these participants, 54% of the students identified as female (n=28) and 46% of the students identified as male (n=24). The participants’ ages ranged from three to five years old with 33% three year olds (n=17), 55% four year olds (n=29), and 12% five year olds (n=6). The majority of the children, 63.5% identified as Caucasian (n=33) and 36.5% are identified as students of color, including African American, Hispanic/Latino, Asian, Indian, Native American, or Multiracial (n=19). The exposure and control groups were randomly assigned by the days in which the children attended school. There were 67.3% of the children in the exposure group (n=35) who received the literature influence and 32.7% of the children in the control group (n=17) who received no literature influence. The participants in the exposure group and control group were randomly selected based on the days in which they attended school. Originally there was a group selected to receive extra literature exposure to see if this had a stronger impact. However, due to absences and time restrictions, this was unable to be tested in this study.

Measures and Materials

The measure used to collect data was a ten minute survey created by the researcher (see Appendix A). The survey contained twenty questions. The questions included, “which face looks like you, which faces are the good faces, which faces are the bad faces, which faces would do a good job, which faces would do a bad job, which faces could be a Doctor, Nurse, Athlete, Police Officer, Chef, Teacher, President, Firefighter, Scientist, Musician, Dentist, Astronaut, Veterinarian, and Pilot, and what job would you like to be when you grow up.” The children were orally asked the questions and were shown a picture of the occupations on cards (see
Appendix B). The children were asked to point to their responses on the skin-tone spectrum card (see Appendix C). The children were also given crayons to draw their desired occupation.

The other materials used in this study were the twenty multicultural occupation books purchased from the children occupation section on the website Amazon.com (see Appendix F), the handmade skin-tone occupation paperdolls (see Appendix E), and the personalized occupation coloring books (see Appendix D).

**Procedure**

To test the children’s initial biases, the researcher conducted one-on-one interviews. The interviews took place at the Connecticut College Children’s Program in a classroom with an observation booth available for the parents or teachers to observe. Before the interview started, the researcher received a signed consent form from the parents (see Appendix G) and read the oral consent form to the children. Next, the children participants, ages three to five years old, were shown the emoji skin-tone face spectrum. They were first asked to point to “the face that looks most like you” The researcher then told the children, that for the next set of questions, they could point to none, all, one, or as many faces as they wanted. The next question asked was “Do any of the faces look good? Point to the faces that look good.” After the children responded, they would be asked why they chose their answer. The next question was “Do any of the faces look bad? Point to the faces that look bad.” The were again asked their reason why. The children were then asked “Which faces would do a good job?” The were again asked their reason why. Then they were asked “Which faces would do a bad job?” Their reasoning was again asked. After these initial questions, the children were reminded again, that for the next set of questions, they could choose none, all, one, or as many of the faces as they wanted. They were then asked one
by one “which faces could be a Doctor, Nurse, Athlete, Police Officer, Chef, Teacher, President, Firefighter, Scientist, Musician, Dentist, Astronaut, Veterinarian, and Pilot.” The respective occupation card (see Appendix B) was shown as visual representation. The last question the children participants were asked was “what do you want to be when you grow up and why?” They were asked to draw their answer on their paper (see Appendix A). The results from the first set of interviews were scored and analyzed.

After all of the pre-test interviews were completed, the second part of the research commenced. This section involved reading multicultural occupation books in the hopes of reducing the children’s implicit biases. For next nine weeks, the researcher read multicultural occupation children’s books and engaged in classroom discussions (see Appendix F). Each week, either one or two books would be read regarding the occupation(s) of the day. The books that were selected included main characters who were individuals of color, women, and/or individuals of different races and genders working together as a team in their occupation. All of the occupations from the books corresponded with the occupations from the interview questions. To go along with the books, the researcher created paper dolls wearing the outfit for each occupation with the faces from the interview skin-tone spectrum (see Appendix E). Each child received one paperdoll and was asked to hold it up when they saw a character in the book that looked like their doll. The purpose of this was, not only to familiarize the children with the faces and make them comfortable with receiving a different face each week, but also to keep the children engaged and focused during the reading. After every book was read, the children were asked to draw themselves as the occupation of the week and these drawings were kept in a journal that they were allowed to take home after the completion of the study (see Appendix D).
At the end of each lesson, the researcher would ask the children if a man or a woman or a person of any skin color could be the job of the week. The researcher also asked if all of the individuals in the book did “good deeds” and worked hard at their job and therefore, were good people. The purpose of this was to reiterate to the children the message that all of the individuals in the books were good regardless of their gender or skin color, and that they could do all of the jobs.

After all the books were read, the researcher repeated the same post-test interview explained above. The same questions were re-asked including, “which faces look good, which faces look bad, which faces could do a good job, which faces could do a bad job, which faces could do all fourteen adult occupations, and which job do you want to do when you grow up?” All of the answers were recorded in the same measure as the first interview. The results from the first interview and the second interview were compared and contrasted to note any significant changes in the children’s answers. At the end of the study, the parents of the children received the debriefing form to inform them of the purpose of the study and to thank them for allowing their child to participate (see Appendix H).

Results

Overview of Data Analysis

The overall hypothesis of the present study was that all of the children would have an initial bias towards choosing White and male faces as good and for more of the occupational roles, and a bias towards choosing the faces of color as bad and for less of the occupational roles. After the literature intervention all of the exposure group children, specifically the female children, children of color, and three year old children, would reduce their biases and increase their selection for all of the faces as good and for the occupational roles. The first statistical
analysis conducted was a chi square goodness of fit analysis to determine if more children initially selected White and male faces as good and for more of the occupational roles and if more children selected the faces of color as bad and for less of the occupational roles. The second analysis used was an ANOVA to examine if after the literature intervention the children reduced their biases and selected more of the faces to be good, less to be naughty, and more faces for all of the occupational roles. The ANOVA analyzed the difference between the race, age, and gender of the participants and the intervention conditions.

**Analysis of White and Male Faces as Good and for Occupations**

In order to test hypothesis one, a chi-square test of goodness-of-fit was performed to determine whether more White faces were selected as good and for the occupational roles by all of the children participants. The analysis for more White faces being selected as good was significant $X^2 (1, N=52) = 6.231, p=.013$. However, the analysis for White faces being selected for more occupational roles was not significant (Doctor, $p=1$, Nurse, $p=1$, Athlete, $p=.782$, Police, $p=1$, Chef, $p=.579$, Teacher, $p=.782$, Pilot, $p=.405$, Firefighter, $p=.405$, Scientist, $p=.579$, Musician, $p=.782$, Dentist, $p=1$, Astronaut, $p=1$, Vet, $p=.166$, President, $p=.096$). A chi-square test of goodness-of-fit was also performed to determine whether more male faces were selected as good and for the occupational roles by all of the children participants. The analysis for more males being selected as good was not significant $X^2 (1, N=52) =.692, p=.405$. However, the analysis for male faces being selected for five of the occupational roles were significant at the $p<.05$ level. These occupations included (Athlete, $p=.006$, Police, $p=.002$, Firefighter, $p=.027$, Astronaut, $p=.013$, President, $p=.002$). The other occupations including Doctor, Nurse, Chef, Teacher, Pilot, Scientist, Musician, Dentist, and Vet were not significant $p>.05$ (see figure 9).
Analysis of Faces of Color as “Bad” and for Occupations

In order to test hypothesis two, a chi-square test of goodness-of-fit was performed to determine whether more faces of color were selected as bad and for less occupational roles by all of the children participants. The analysis for more faces of color being selected as bad was significant $X^2 (1, N=52) = 4.923, p=.027$. Due to the fact that the Black male face was chosen as bad significantly more than all of the other faces, a one-way ANOVA was analyzed to determine if this face was chosen across race and gender conditions of the participants. The analysis found that there was no significance between children of different races selecting the Black male face as bad $[F (1, 50)= .191, p=.664]$ and between children of different genders selecting the Black male face as bad $[F (1, 50)= .350, p=.557]$. Also, the analysis for faces of color being selected for less occupational roles was not significant (Doctor, $p=1$, Nurse, $p=1$, Athlete, $p=.782$, Police, $p=1$, Chef, $p=.579$, Teacher, $p=.782$, Pilot, $p=.405$, Firefighter, $p=.405$, Scientist, $p=.579$, Musician, $p=.782$, Dentist, $p=1$, Astronaut, $p=1$, Vet $p=.166$, President, $p=.096$) (see figure 7).

Analysis of Literature Intervention Effectiveness

In order to test hypothesis three, an ANOVA analysis was performed to determine if the participants who received the literature intervention decreased their biases and selected more faces as good, less faces as bad, and more faces for occupational roles compared to the control group of participants. The analysis for more faces being selected as good was significant $[F (1, 50)= 10.752, p=.002]$. The analysis for less faces being selected as bad was not significant $p=.514$. However, there was a 28% increase in the amount of children who found none of the faces to be naughty (see Figure 3). The analysis for more faces being selected for seven of the occupational roles were significant at the $p<.05$ level. These occupations included (Nurse, $p=.05$, President, $p=.096$).
Teacher, p=.035, Pilot, p=.015, Firefighter, p=.010, Astronaut, p=.026, Vet, p=.011, President, p=.015). The results for the other jobs including Doctor, Athlete, Police, Chef, Scientist, Musician, and Dentist were not significant p>.05 (see figures 11-37). However, with a larger sample size the jobs that were not found significant could have moved towards significance.

**Analysis of Age Condition**

In order to test the fourth hypothesis, an ANOVA analysis was performed to determine if the three year old participants who received the literature intervention decreased their biases and selected more faces as good, less faces as bad, and more faces for multiple occupational roles compared to the four and five year old participants. The analysis for more faces being selected by the four and five year olds as good was significant \(F (1, 33) = 7.08, p=.01\). The analysis for less faces being selected as bad by the three year olds was not significant \(F (1, 33) = .389, p=.537\). No significance was found for more faces being selected by the three year olds for the occupational roles compared to the other age groups.

**Analysis of Gender Condition**

In order to test hypothesis five, an ANOVA analysis was performed to determine if the female participants, who received the literature intervention, decreased their biases and selected more faces as good, less faces as bad, and more faces for the occupational roles compared to the male participants. The analysis for more faces being selected as good by the female participants was not significant \(F (1, 33) = .054, p=.817\). The analysis for less faces being selected as bad by the female participants was not significant \(F (1, 33) = 1.27, p=.268\). No significance was found for more faces being selected by the female participants for the occupational roles.

**Analysis of Race Condition**
In order to test hypothesis six, an ANOVA analysis was performed to determine if the children of color participants, who received the literature intervention, decreased their biases and thereby selected more faces as good, less faces as bad, and more faces for multiple occupational roles compared to the White participants. The analysis for more faces being selected by the children of color as good was not significant \[F (1, 33)= 1.47, p=.234\]. The analysis for less faces being selected as bad by the children of color was not significant \[F (1, 33)= .001, p=.975\]. No significance was found for more faces being selected by the children of color participants for the occupational roles compared to the White children.

**Analysis of Self-Selected Occupation**

In order to test hypothesis seven, an ANOVA analysis was performed to determine if the literature exposure impacted the child’s ability to acknowledge that they can do their aspired occupation. The analysis for more children in the exposure group selecting a face that resemble themselves for their aspired occupation was significant \[F (1, 50)= 10.9, p=.002\].

**Discussion**

The overall purpose of the present study was to examine the effects of literature intervention on reducing children’s implicit racial and gender biases. It was hypothesized that the children would have a preconceived bias to select White and male faces as “good” and for more jobs and to select faces of color as “bad” and for less jobs. It was also hypothesized that after the literature exposure, all of the children, specifically three year old children, female children, and children of color, would decrease their biases by selecting more faces as good, less faces as bad, and more faces for all of the occupational roles. Lastly, it was hypothesized that the literature
intervention would cause the children to select faces that resemble themselves for their aspired future occupation compared to the children in the control group.

**Analysis of Hypotheses**

The results of the study support hypothesis one that, prior to the literature exposure, most of the children, *regardless of race and gender*, had a preference for White faces as being “good,” but not for the occupational roles. This finding is most likely due to the media portraying White individuals more often as being good. It was surprising that White individuals were not selected for more occupational roles because, when searching for occupation books, the majority of the books only portrayed White individuals. The data did not support that the children had a preference for the male faces for being “good,” but it did support males being selected for most of the occupational roles. This finding may be the result of the majority of occupation books, television shows, and movies having predominantly male characters. It is not surprising that females were selected as good more than males because, in society, females are stereotyped as being more caring and nurturing. The results of the study support hypothesis two that prior to the literature exposure, most of the children, regardless of race and gender, had a prejudice against Black and Brown individuals for being “naughty and bad,” but not for many occupational roles. This may be caused by the media portraying individuals of color in a negative light. The results of the study support hypothesis three that the more literature exposure a child experiences towards individuals of different genders and races in occupational roles, the more their implicit biases towards these individuals will decrease and their preference for these individuals to be “good and nice” and to be all of the occupations will increase. This is an important finding because it shows that, by seeing individuals of different races and genders working together in
multiple occupational fields, it allows the children to see more of the faces as good and able to
do the occupations. The results of the study did not support that part of the hypothesis which
stated that the children will decrease their preference for the faces to be seen as naughty. While
this was an unfortunate finding, it is important to focus on the positive aspect that there was a
28% increase in the amount of children who said none of the faces were naughty after the
literature intervention. The results of the study did not support hypothesis four that children age
three would be more likely to change their biases. The data found the reverse, that four and five
year olds were more likely to increase their face selection. This researcher would surmise that the
older children had a better understanding of the intervention material due to their developmental
stage. The results of the study did not support hypotheses five or six by finding no significant
difference between the gender or race of the participants for selecting more faces after the
intervention. This is an important finding because it shows that a child of any race or gender can
reduce their biases and respond positively to this intervention. The results of the study supports
hypothesis seven that the children in the exposure group would be more likely to select a face
that resembles themself for their aspired occupation. This is another important finding because it
proved that when children are exposed to individuals who resemble themselves in their aspired
occupation, they are more likely to see themselves in that occupational role. Overall, the findings
showed the children had a positive response to the multicultural occupational literature as it
allowed most of them to reduce their biases towards individuals of different races and genders. It
is also important to note that these results were found after only nine weeks of intervention and
an expanded time could have more of an impact.

**Comparison to Previous Studies**
The results of the present study were consistent with the results of the previous racial studies including the Clark Doll Test (1941-1954), the Girl Like Me study (2005), and the CNN study (2010). In all three of these studies, the children participants found the White doll and White cartoon images to be “nice, good, and pretty” and the Black doll and Black cartoon images to be “bad, ugly, and naughty.” This was consistent with the results of the current study because all of the children participants regardless of age, race, and gender, had a significant initial bias to select White faces as good or nice and faces of color as bad or naughty.

The results of the present study were also consistent with the gender occupational studies including the studies by Shepard & Hess (1975), Zuckerman & Sayre (1982), Repetti (1984) and Weisgram, Bigler, & Liben (2010). In these studies, the children's own career choices were stereotypic. For example, in the study by Zuckerman & Sayre (1982), 83% of the boys and 68% of the girls choose traditional careers. Girls chose nurse (52%), teacher (16%), dancer (8%), and veterinarian (8%) and boys chose athlete (22%), fireman (17%), police officer (17%), and truck driver (11%). In the current study, initially three of the female children choose their preferred future occupation to be a princess, one female child chose cheerleader, one female child chose mom, and many female children chose more common jobs such as baker, teacher, and nurse. Boys typically chose occupations similar to the previous study such as athlete, fireman, and police officer. Another similarity to the previous studies is that the children were more likely to select jobs as specifically masculine or feminine (see figures 9&10). The occupations that were initially selected as masculine occupations included athlete, police officer, firefighter, astronaut and president. The occupations initially selected as feminine include nurse, doctor, chef, teacher, pilot, scientist, musician, dentist, and veterinarian.
Expansion of Current Research

The current study expands on these previous studies because while it acknowledges that these patterns of racial and gender biases in children still exist, it attempts to find a solution to reduce these biases. This study uses multicultural occupational children’s books as an intervention measure (see Appendix F). This study combined research from the previous racial and gender studies instead of looking at just race or gender. By combining these conditions, it brought forward clear patterns of bias. For example, there was more racial bias when the children had to decide whether the faces looked good or bad (see figures 1-4). This was evident in the children’s verbal responses to the questions as well. The children often gave racial reasons to their selection of bad or good faces such as “[They are bad because] He/She is Black or Brown” “He has a Brown face,” “He is SO Black,” “Cus he’s the dark sky,” and [they are good because] “White skin color” and “they don’t look Black.” However, there was not a lot of racial bias when it came to selecting faces for the occupations (see figures 7&8). There were still some explicit racial comments regarding the occupations such as “They’re Black & play together” for the occupation athlete, “She [White girl] flies it, they [Black boy and Black girl faces] are in trouble in back” for the occupation pilot, and “Because he’s Black” for the occupation police officer.

In comparison, there was less gender bias when the children had to decide whether the faces looked good or bad (see figures 1-4). There were less explicit comments regarding to the gender of the faces. The only comments were usually from children of the opposite gender saying “boys/girls are nice” or “boys/girls are naughty.” Comments such as these are not unusual for children aged three to five years old. However, there was a significant amount of gender bias when it came to selecting faces for the occupations (see figures 9&10). There were also many
gender biased explicit comments for the occupations such as “Only girls [can be nurses],” “Only boys are [athletes],” “Boys can be [firefighters],” “Girls are [teachers]” “Lady could be dentist, but man checks the teeth,” and “Only boys [can be president].” Comments such as these are stereotypical for individuals that are perceived as performing these occupations within society and the children must have previously heard them either in the media or outside of school.

Although there was not a significant difference regarding race or gender for some of the occupations, almost all of the children initially had a preconceived notion of only one or two specific faces being able to do the specific job. However, after the literature exposure, there was a significant increase regarding the amount of faces selected for all fourteen occupations, compared to the control group (see figures 5&6). This shows that after the literature intervention the children decreased their biases regarding what type of person could do a certain occupation.

The current study also found that there was a disparity regarding a child selecting a face that resembled themselves for their desired future occupation. For example, many children selected an occupation that they wanted to be when they grew up (ie. nurse), but said that only a specific person (ie. female) could do that occupation. However, after the literature exposure there was a significant increase in the amount of children who selected a person that looked like themselves to do their aspired occupation compared to the children in the control group (see figure 39).

**Limitations and Future Research**

There were several limitations in this study. One of the biggest limitations was time. Due to time constraints, the literature exposure only took place for a half hour each week for 9 weeks. For future research, it would be important to see if a longer span of literature exposure would have a greater effect on the children’s responses. Another limitation was population size of the
study which was relatively small. There were only fifty-two total students (thirty-five in the exposure group and seventeen in the control group). For future research, it would be important to see if more participants would show a stronger correlation pattern. A third limitation was population diversity. In this group, only ⅓ of the participants were children of Color and ⅔ of the participants were White. For future research, it would be important to see if having a more even racial makeup of the population will have a greater effect on the children’s responses. Although the results of the study proved that race did not have a statistically significant impact on the data, the racial makeup could have an impact on the dynamic of the class. The last limitation was external factors. Due to the constraints of this study, the researcher was not aware of what information the children were receiving outside of the Children's Program. This of course could have had an impact on the children’s responses. For future research, it would be important to ask the families of the children what kinds of shows, books, and movies, the children are engaging with in order to learn how they are developing their racial and gender awareness. It would be also important to investigate if the parent’s implicit biases had an impact on their children.

Conclusion

Overall, the present study presents promising results that highlight the present gender and racial biases that preschool aged children develop either consciously or unconsciously, just as previous studies had found in years before. The data found in this study expresses that although these racial and gender biases may exist, they can be challenged and reduced by reading multicultural literature. The data also supports the theory that multicultural literature exposure has significantly and positively increased the children’s perceptions for individuals of other races and genders and for their future occupational aspirations. Due to this finding, it is crucial for all
schools to support and promote the implementation of more multicultural and inclusive literature programs throughout their school curriculums. Teachers should also be required to read more books about successful individuals of different races, genders, and ethnicities in multiple occupational fields. This form of occupational literature is important to read to young children as well because it provides them with the message that they can be anything they aspire to be regardless of their race and gender. This positive reinforcement is extremely important to the self esteem of young children in their future endeavours. Lastly, the present study shows that it is important to teach young children to become more open, accepting, and loving of one another, so that they can become the generation that changes society for the better.
References


Appendix A

Occupation Survey

Data Sheet

ID Number: DM (Ub)  Group Number: 0  Race/Ethnicity: 

Gender: F  Age: 4 y

1. What do you want to be when you grow up?
   a. Why?

2. Can you point to the face(s) that looks like you?

3. Can you point to the baby/naughty face(s)

4. Can you point to the good face(s)

5. Can you point to the face(s) that would do a "good" job

6. Can you point to the face(s) that would do a "bad" job

7. Can you point to the face(s) that would be a Doctor

8. Can you point to the face(s) that would be a Nurse

9. Can you point to the face(s) that would be an Athlete

10. Can you point to the face(s) that would be a Police Officer

11. Can you point to the face(s) that would be a Chef

12. Can you point to the face(s) that would be a Teacher

13. Can you point to the face(s) that would be a Pilot

14. Can you point to the face(s) that would be a Firefighter

15. Can you point to the face(s) that would be a Scientist

16. Can you point to the face(s) that would be a Musician

17. Can you point to the face(s) that would be a Dentist

18. Can you point to the face(s) that would be an Astronaut

19. Can you point to the face(s) that would be a Veterinarian

20. Can you point to the face(s) that would be President

Oral Consent Questions:

- Your parent has given you permission to talk with me. Do you want to?
  - Would it be ok if I asked you another time?
- You can stop at any point if you want. Do you understand this is a game between just you and me?

Interview Questions

1. Do you know what you want to be when you grow up? Can you draw yourself doing the job?

2. Can you point to the face that looks like you?

3. Can you point to the good face(s)? (you can pick more than one)

4. Can you point to the bad face(s)? (you can pick more than one)

5. Can you point to the face(s) that would do a good job? (you can pick more than one)

6. Can you point to the face(s) that would do a bad job? (you can pick more than one)

7. Can you point to the face(s) that would be a Doctor? (you can pick more than one)

8. Can you point to the face(s) that would be a Nurse? (you can pick more than one)

9. Can you point to the face(s) that would be an Athlete? (you can pick more than one)

10. Can you point to the face(s) that would be a Police Officer? (you can pick more than one)

11. Can you point to the face(s) that would be a Chef? (you can pick more than one)

12. Can you point to the face(s) that would be a Teacher? (you can pick more than one)

13. Can you point to the face(s) that would be a Pilot? (you can pick more than one)

14. Can you point to the face(s) that would be a Firefighter? (you can pick more than one)

15. Can you point to the face(s) that would be a Scientist? (you can pick more than one)

16. Can you point to the face(s) that would be a Musician? (you can pick more than one)

17. Can you point to the face(s) that would be a Dentist? (you can pick more than one)

18. Can you point to the face(s) that would be an Astronaut? (you can pick more than one)

19. Can you point to the face(s) that would be a Veterinarian? (you can pick more than one)

20. Can you point to the face(s) that would be President? (you can pick more than one)

Draw a picture of yourself doing your job.
Appendix B

Occupation Cards
Appendix C

Skin-Tone Face Spectrum
Appendix D

Coloring Book
Appendix E

Paper Dolls
Appendix G

Parental Informed Consent Form

Study Title: The Influence of Storytelling on a Child's Attitude About Career Choice

Principal Investigator: Bryanna Paskowitz
Connecticut College
270 Mohegan Avenue
bpaskowi@conncoll.edu

• Your child is being invited to participate in Bryanna Paskowitz’s research about the effect of listening to stories about occupations and how that might influence your child’s attitude about career choice.

• We expect this will be a fun and familiar activity for your child.

• This research will involve having different books read to your child and then asking them to point to faces of different races and genders based on who they perceive does a certain job.

• The interview will take about 15 minutes twice over the semester which goes from late January until April. It will be conducted either in the classroom or in a room attached to the classroom. You are welcome to observe the interview.

• There are no known risks or discomforts related to participating in this research.

• Your child’s participation is dependent upon you signing this informed consent. In addition, your child may choose not to participate.

• You may contact the researcher Bryanna Paskowitz and the director Dr. O’Connor who will answer any questions that you may have about the purposes and procedures of this study.

• There will also be two meeting times for you to meet with the researcher and the director about any question you might have about this activity.

• This study is not meant to gather information about specific individuals. Your child’s responses will be anonymous, documented only by an ID number, and statistically analyzed with other participants’ data.

• You are being asked to consent to publication of the study results as long as the identity of all participants is protected.

• This research has been approved by the Connecticut College Children’s Program and the Connecticut College Human Subjects Institutional Review Board (IRB). Concerns about any aspect of this study may be addressed to Audrey Zakriski azakriski@conncoll.edu.

A copy of this informed consent will be given to you.

____________________________  ________________________  ______
Name of person obtaining consent  Signature  Date
Appendix H

Debriefing Form

Thank you for allowing your child to participate in this research dealing with the effect literature has on a child’s implicit attitudes towards occupational aspirations. In this research, I first wanted to find out if children had implicit attitudes toward individuals of different races and genders ability to do certain occupations. I also wanted to see if these attitudes affected their own occupational aspirations. In addition, I wanted to see if, by reading books that showed individuals of different races and genders in occupational roles, it would change their attitudes. I was motivated to conduct this study as a continuation to the Clark Doll study. In that multiracial study, the Clarks found that almost all of the young children had a preference for the White doll. These findings were upsetting because these results still held to be the same with replication of these tests in recent years. I wanted to find out if these preferences and attitudes would extend even further to influence the children’s future occupational aspiration for themselves. My hope for my findings was that by reading multicultural occupational books I could help influence the children’s attitude to recognize their highest occupation potential.

If you have any questions or concerns about the manner in which this study was conducted, please contact the IRB Chairperson Audrey Zakriski azakriski@conncoll.edu.

If you are interested in this topic, you might enjoy the following books:

This Little Trailblazer: A Girl Power Primer By: Joan Holub

Riley Can Be Anything By: Davina Hamilton

You may contact me Bryanna Paskowitz at bpaskowi@conncoll.edu for additional resources.
Figure 1. Exposure Group Nice/Good Facial Perceptions. Statistical significance was found for White faces to be initially selected as good $X^2 (1, N=52)=6.231, p=.013$. No statistical significance was found for Male faces to be initially selected as good $X^2 (1, N=52)=.692, p=.405$. Statistical significance was found for all of the faces to be selected more after the intervention $[F (1, 50)= 10.752, p=.002]$. No statistical significance was found between race and gender of the participants at the $p>.05$ level.
Figure 2. Control Group Nice/Good Facial Perceptions. Statistical significance was found for White faces to be initially selected as good $X^2 (1, \ N=52) = 6.231, \ p = .013$. No statistical significance was found for Male faces to be initially selected as good $X^2 (1, \ N=52) = .692, \ p = .405$. 
Figure 3. Exposure Group Naughty/Bad Facial Perceptions. Statistical significance was found for faces of color to be initially selected as bad $X^2 (1, N=52) = 4.923, p=.027$. There was no significance between children of different races selecting the Black male face as naughty [$F (1, 50)= .191, p=.664$] and between children of different genders selecting the Black male face as naughty [$F (1, 50)= .350, p=.557$]. No statistical significance was found for the faces to be selected as bad less after the intervention $p=.514$. 
Figure 4. Control Group Naughty/Bad Facial Perceptions. Statistical significance was found for faces of color to be initially selected as bad $X^2 (1, N=52) = 4.923$, $p = .027$. There was no significance between children of different races selecting the Black male face as naughty [$F (1, 50) = .191$, $p = .664$] and between children of different genders selecting the Black male face as naughty [$F (1, 50) = .350$, $p = .557$].
Figure 5. Exposure Group Perceptions that Everyone Could Do Every Job. After the intervention, statistical significance was found for all of the faces to be selected for seven of the occupational roles including (Nurse, p=.05, Teacher, p=.035, Pilot, p=.015, Firefighter, p=.010, Astronaut, p=.026, Vet, p=.011, President, p=.015). No statistical significance found for other jobs including Doctor, Athlete, Police, Chef, Scientist, Musician, and Dentist at the p> .05 level.
Figure 6. Control Group Perceptions that Everyone Could Do Every Job.
Figure 7. Exposure Group Total Job Perceptions by Race Pre-Test. Before the Intervention, White faces were initially not significantly selected for more occupational roles than faces of color p > .05 (Doctor, p = 1, Nurse, p = 1, Athlete, p = .782, Police, p = 1, Chef, p = .579, Teacher, p = .782, Pilot, p = .405, Firefighter, p = .405, Scientist, p = .579, Musician, p = .782, Dentist, p = 1, Astronaut, p = 1, Vet, p = .166, President, p = .096).
Figure 8. Exposure Group Total Job Perceptions by Race Post-Test.
**Figure 9.** Exposure Group Total Job Perceptions by Gender Pre-Test. Before the Intervention, Male faces were initially significantly selected for more occupational roles than female faces for five of the occupational roles (Athlete, p=.006, Police, p=.002, Firefighter, p=.027, Astronaut, p=.013, President, p=.002). The other occupations including Doctor, Nurse, Chef, Teacher, Pilot, Scientist, Musician, Dentist, and Vet were not significant at the p>.05 level.
Figure 10. Exposure Group Total Job Perceptions by Gender Post-Test.
Figure 11. Exposure Group Perceptions For the Occupation Doctor.
Figure 12. Control Group Perceptions For the Occupation Doctor.
Figure 13. Exposure Group Perceptions For the Occupation Nurse. After the literature intervention, the analysis for more faces being selected for Nurse was significant $p=.05$. 
Figure 14. Control Group Perceptions For the Occupation Nurse.
Figure 15. Exposure Group Perceptions For the Occupation Athlete.
Figure 16. Control Group Perceptions For the Occupation Athlete.
Figure 17. Exposure Group Perceptions For the Occupation Police Officer.
Figure 18. Control Group Perceptions For the Occupation Police Officer.
Figure 19. Exposure Group Perceptions For the Occupation Chef.
Figure 20. Control Group Perceptions For the Occupation Chef.
Figure 21. Exposure Group Perceptions For the Occupation Teacher. After the intervention, the analysis for more faces being selected for teacher was significant $p=.035$. 
Figure 22. Control Group Perceptions For the Occupation Teacher.
Figure 23. Exposure Group Perceptions For the Occupation Pilot. After the intervention, the analysis for more faces being selected for pilot was significant \( p = 0.015 \).
Figure 24. Control Group Perceptions For the Occupation Pilot.
Figure 25. Exposure Group Perceptions For the Occupation Firefighter. After the intervention, the analysis for more faces being selected for firefighter was significant p=.010.
Figure 26. Control Group Perceptions For the Occupation Firefighter.
Figure 27. Exposure Group Perceptions For the Occupation Scientist.
Figure 28. Control Group Perceptions For the Occupation Scientist.
Figure 29. Exposure Group Perceptions For the Occupation Musician.
Figure 30. Control Group Perceptions For the Occupation Musician.
Figure 31. Exposure Group Perceptions For the Occupation Dentist.
Figure 32. Control Group Perceptions For the Occupation Dentist.
Figure 33. Exposure Group Perceptions For the Occupation Astronaut. After the intervention, the analysis for more faces being selected astronaut was significant $p=.026$. 
Figure 34. Control Group Perceptions For the Occupation Astronaut.
Figure 35. Exposure Group Perceptions For the Occupation Vet. After the intervention, the analysis for more faces being selected for Vet was significant $p=.011$. 
Figure 36. Control Group Perceptions For the Occupation Vet.
Figure 37. Exposure Group Perceptions For the Occupation President. After the intervention, the analysis for more faces being selected for president was significant $p = .015$. 
Figure 38. Control Group Perceptions For the Occupation President.
Figure 39. Exposure and Control Group Times Child Selected Themself as Their Chosen Job.

Children in the exposure group had a significant increase in their selection of a face that resembled themselves for their aspired occupation \([F(1, 50) = 10.9, p = .002]\).