

Modeling My Mother? An Exploration of the Relationship between a Mother's Occupational Status and Her Daughter's Career Aspirations

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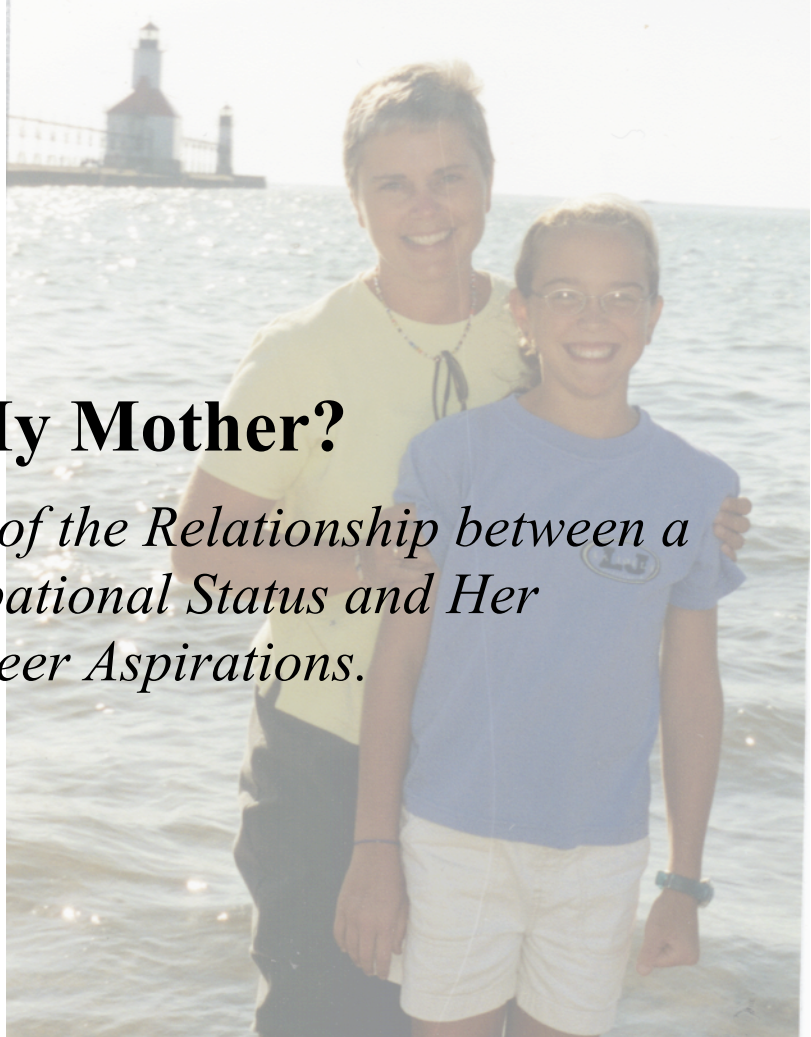
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Modeling My Mother?

An Exploration of the Relationship between a Mother's Occupational Status and Her Daughter's Career Aspirations.

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Abstract

This research looks at the ways in which mothers influence their daughter's educational achievements and occupational aspirations. The goal is to determine whether the Role-Model Hypothesis or Grades Hypothesis explains the relationship more. According to the literature, the Role-Model Hypothesis is based on ideas of socialization and gender-role stereotypes while the Grades Hypothesis is based on the idea of transmission of social capital, which improves test scores. In order to test these hypotheses, a series of multinomial logistic regression models were run on the responses of a sample of 7,716 female students and their mothers to the Educational Longitudinal Study, (ELS) 2002, Base Year. The results provide evidence in support of the Grades Hypothesis. A mother with higher educational attainment and a more prestigious occupation is more likely to have a daughter with higher test scores, with higher test scores leading to higher expectations and aspirations by the daughter. Implications of this finding include suggestions for the need for action, policy changes, and the decline in the importance of gender theory in influencing aspirations.

KEYWORDS: educational attainment, occupational aspirations, role-model theory, social capital transmission

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Table of Contents

Introduction.....	5
Literature Review	12
<i>The Family's Influence</i>	
<i>The Influence of the Mother</i>	
<i>Social Structure and Personality Framework</i>	
<i>Gender-Role Socialization</i>	
<i>Role Model Hypothesis</i>	
<i>Social Capital Theory</i>	
<i>Grades Hypothesis</i>	
Methodology	30
<i>Sample</i>	
<i>Variables</i>	
Analytic Strategy	35
Results.....	38
<i>Models</i>	
Discussion	53
References.....	63

INTRODUCTION

The topic of women's participation in the labor force has been studied with increasing interest in recent years. "Since the years of World War II, women have entered the workforce in steadily increasing numbers, both before and after marriage, with and without children (Betz & Fitzgerald, 1987 as cited in Rainey & Borders, 1997, p. 160). In 1971, 40.4% of women in the United States were employed (U.S. Bureau of Labor statistics). Fast forward thirty years to 2012, when this percentage was at its highest ever, with 58.6% of women employed. In comparison, the percentage of men employed in the same year was 69.9%. "As Hyde (1985) discovered, the working woman today is not a deviation from the norm. Rather she is the norm" (as cited in Rainey & Borders, 1997, p. 160).

Interestingly though, even as women's labor force participation has increased, significant differences still exist between the sexes in areas such as pay. In fact, in 2011, female full-time wage and salary workers earned, on average, \$148 less per week overall than their male counterparts (U.S. Bureau of Labor Statistics). Over the course of a year that number adds up to a difference of \$7,696. Kenkel and Gage (1983) note, "Despite the recent movement of some women into non-traditional jobs and careers, large numbers aspire to gender-appropriate jobs which effectively means that they are restricted in their choices to a few specific jobs. Such jobs are not well rewarded financially" (p. 129). Even when women do have comparable jobs to males, they report earning less (Davidson & Burke, 2012). Even more recently, Fetterolf and Eagly (2011) have commented that though women in the workforce have become more widespread, females still face

significant challenges in terms of what types of positions they can attain and what level of pay they will achieve.

These discrepancies have prompted sociologists over the years to try to understand the factors that influence women's career aspirations, decisions and achievements. Early studies of the topic focused on women's occupational mobility as a result of their father's occupational positions (Rosenfeld, 1978). These studies, while important, failed to take into account the effect of gender socialization and role modeling that is based upon the mother. This is problematic because "while it is not always made explicit, a general assumption underlying the occupational aspirations of youth is that attitudes toward work and work roles are learned through socialization" (Kenkel & Gage, 1983, p. 131). The majority of the literature on the topic of women's occupational aspirations, however, comes from the 1970s, only just as women increasingly began to work outside of the home. The research shifted to reflect this evolution of the traditional family from one in which the father was the primary breadwinner and the mother was a homemaker, to a more dual-earner based household. Many studies began to examine, for the first time, the role that the mother's occupational status had on the daughter's education and future employment through socialization.

The mother's influence was examined in relation to a variety of variables to determine which were most relevant to young females' career development (Rainey & Borders, 1997). The studies routinely found that "when their mothers are employed, young women are likely to have higher career aspirations" (Barling 1990; Hofferth 1980; Lerner 1994; Rainey & Bordes 1997; Shapiro & Crowley 1982; Rosenfeld 1978, as cited in Baird, 2008). After this correlation was repeatedly found, the research began to delve

deeper into why this was the case. Possible explanations included: gender-role attitudes, socialization during early adolescence, the mother-daughter relationship, “maternal characteristics (education status, employment status, gender role attitudes and agentic characteristics)”, and family structure (O’Brien & Fassinger, 1993 as cited in Rainey & Borders, 1997).

As mentioned previously, the bulk of this research was conducted in the 1970s, and there is a lack of literature on the topic coming from more recent years. Much of the former research suggested that, in order for women to gain more equality in the labor force, attention should be paid to how they were encouraged and motivated. This was based on the fact that “past research generally has reported a positive relationship between the encouragement given to children by their parents and the children’s educational and occupational aspirations” (Kenkel & Gage, 1983, p. 135). However, the fact still remains that today, women are “underrepresented in certain workplace sectors, particularly non-traditional occupations and leadership roles” (Guadagno & Eno, 2010). This raises important questions related to study of women’s education and participation in the labor force, about exactly how young girls are being encouraged and if they are being encouraged enough.

I have found that a great deal of the focus today seems to not be on this formulation of education and occupation preferences, but instead on two general areas of interest: the work-life balance of employed women, and the effect that maternal employment has on young, school aged children (Fetterolf & Eagly, 2011). In my opinion, the literature revolves too often around this debate about how harmful it is for children to have a working mother and whether working negatively impacts the

traditional role of being a wife. The framing of these questions and similar ones seems inherently negative and biased against women. The image of the mother as a homemaker appears to still be entrenched in our cultural values, even though the statistics prove that this is no longer the case. Women today do more than their predecessors – working outside the home and homemaking in it. What is lacking in the literature is an assessment of the positive impact that a mother's education level/work status can have on her children, specifically her daughter. A void exists in examining the same topics (socialization, encouragement and motivation) that were explored during the 1970s from a current perspective. One exception to this void is the study of the factors that influence women to choose careers in math and science, one of which has been socialization by the family, including the mother (Bleeker & Jacobs, 2004; Tenenbaum & Leaper, 2003).

The importance of my research lies in the fact that in order for women to make significant gains in equalizing with men in terms of work, we must understand if the influences from the 1970s still hold true for young women today. Understanding these factors will help explain why women still seem to face more challenges than men in terms of both occupation and pay, setting aside issues of discrimination in the workplace. The structural and social factors that shape the occupations and pay of women are quite distal to the experience in the workplace itself. While women may experience gender discrimination in the workplace, this does not shape their beliefs about what they can do and what they “want” or “like” to do, which develop in childhood. This is increasingly important as family structure today continues to shift toward that of a dual-income family, whether by choice or out of economic necessity. Young women today have seemingly endless options in front of them, but in fact “the vast majority of working

women, 80 percent, hold the lowest-paid and most dead-end jobs in this country” - in other parts of the world this statistic is often even worse (Miller, 1986).

The Institute for Women’s Policy Research notes that, “Women, on average, earn less than men in virtually every single occupation for which there is sufficient earnings data for both men and women to calculate an earnings ratio” (Pay Equity). This paradox of the inevitable entry into the labor force combined with marked limits on possible achievements drew my attention as a topic that needed further research. My primary interest is in relation to what motivates women to enter (or not enter) the labor force in the first place, and what factors differentiate those with higher career aspirations.

This question is important to me because it grows out of observations I have made in my own personal life. As I have grown closer to completing my time as an undergraduate student, I have begun to pay closer attention to my friends’ post-graduation plans. I began to notice, through my conversations with friends, that there seems to be a difference between the academic achievement and career aspirations of my female friends depending on their mother’s level of education and occupational status. My informal observations suggest that my friends whose mothers had worked while they were young had every intention of working, seeing it as a critical component of being a successful woman. My friends whose mothers had not been employed while they were growing up spoke more about working until they had children and how they wanted to pursue more traditionally female careers which would allow them plenty of time for both work and family.

I couldn’t help but notice that my friends’ preferences for their careers aligned very closely with what their mother did. The rare deviations from this seemed to be in

cases where my friends perceived that their mothers were not happy with their role. These observations sparked my interest in the topic and made me consider whether the results were based upon the select group of friends that I spoke with, or would apply across a wider range of women. My initial research in the topic led to even more interest, as I discovered that the literature from the 1970s and beyond found that indeed, a mother's influence is important in terms of her daughter's career goals.

Keeping with the ideas of the 1970s literature, I agree that in order for women to make inroads in breaking down gendered barriers that exist in the labor force they need to have an extensive support system encouraging them to reach for and succeed at achieving these goals. Few would argue with the assumption that the mother is a critical factor in the determination of her daughter's career. What differentiates my research is that it focuses on the question of *how* this influence happens. My research will examine the two possible hypotheses about how a mother's education and occupation influences her daughter's education and occupation aspirations. The examination of secondary data from the Education Longitudinal Study (ELS) 2002 will allow me to examine whether the primary means of influence is one of direct modeling (where daughters aspire to the same levels as their mothers) or whether mothers influence early achievement levels of daughters, which then influence future aspirations. The independent variables of the mother, including education and occupation were selected from their noted importance in predicting daughters' measures as determined by previous literature (Kalmijn, 1994; Kenkel & Gage, 1983).

I believe that my results will shed further light on the importance of the mother, in particular her education level and occupational status, in relation to the daughter's

education and career aspirations. Understanding more about the socialization process and its impact on women's aspirations is critical to encouraging females to continue their education, to pursue non-traditionally feminine occupations, and to narrowing the achievement and pay gap between men and women even farther. The findings will help delineate the best channels and methods through which to encourage young women in their educational and occupational pursuits.

Literature Review

The study of educational achievement and occupational choice is one that has received much attention from sociologists. Social inequalities are a focus of sociology and much attention is paid to the examination of markers of social class and socioeconomic status. Education and occupation are two major determinants of class, as well as two potential mechanisms for social mobility. An extensive literature exists on the primary factors that influence both of these outcomes. In terms of my research on women's educational and occupational aspirations it is useful to begin by understanding the basic influence that the family has. From there, the role of the mother in particular in shaping these aspirations can be examined. Finally, it is useful to understand what has been written about the mechanism of this influence. My research will examine two competing hypotheses – what I will call the “Role Model Hypothesis” and the “Grades Hypothesis”. Understanding what has been written on the subject previously helps to better understand my findings and enables me to see their connection to and divergence from current theory.

The Family's Influence

It has long been recognized that the family is one of the primary influences on children's educational and occupational aspirations (Khalland, 2000; Watson et al., 2002 as cited in Domenico & Jones, 2006, p. 3). Burlin (1976) notes, “the occupational status and educational level of females' parents have had a significant impact on their career aspirations and career choice” (as cited in Domenico & Jones, 2006, p. 3). This makes sense as adolescents spend a majority of their time with their families, which are the

primary agent of childhood socialization. The family is defined by Kramer (1980) as a “...group of people with a past history, a present reality, and a future expectation of interconnected transactional relationships” (as cited in Bratcher, 1982). This is important as each family has its own “set of rules, roles, a power structure, forms of communication, and way of negotiating and problem solving” (Bratcher, 1982). Bratcher (1982) notes that the emergence of Family Systems Theory helps to explain how the family impacts “virtually all aspects(s) of the individual’s life”.

Family Systems Theory assumes that the family is the social system that is the most powerful over the entirety of our lives, and that these family relationships “tend to be highly reciprocal, patterned, and repetitive; and to have circular rather than linear motion” (Bratcher, 1982). Examining an individual’s career choice through the Family Systems Theory then calls into question the effects of the “environment, cultural expectations, social class, family background, socioeconomic factors, race, sex”, and more. Each of these factors is evident over the entirety of the life course. Sewell and Shah’s (1968) study entitled “Social Calls, Parental Encouragement, and Educational Aspiration” is an early example of a study that examines factors that affect the education plans of teenagers. It made reference to similar variables, including “sex, intelligence, high school achievement, [and] value orientations”. The relevance of these variables is confirmed today, but with an increased awareness of how these variables impact career related planning and decision-making (Sitt-Gohdes, 1997 as cited in Domenico & Jones, 2006, p. 3).

Another empirical study which highlights the importance of the family in students’ educational and occupational aspirations is Wells, Seifert, Padgett, Park and

Umbach's (2011) "Why do More Women than Men Want to Earn a Four-Year Degree? Exploring the Effects of Gender, Social Origin, and Social Capital on Educational Expectations." This article contains a comprehensive review of the background literature "relative to parents' and peers' influences on students' educational expectations from social origin and social capital perspectives" (Wells et al., 2011, pg. 3). Social origin implies the financial, social, and cultural context in which the child was raised (Wells et al., 2011, p. 3). Relevant measures of social origin include "parents' education, parents' occupational prestige, family income, family size, and socioeconomic status" (Wells et al., 2011, p. 4). Most applicable to my research is the authors' assertion that "parents' educational attainment influences their children's educational expectations in terms of providing financial resources and as a model of college-going behavior" (Wells et al., 2011, p. 4). While Wells and colleagues (2011) focus on the importance of the influence of the family as a whole on children's education outcomes, they conclude by noting, "*Same-sex parental education influences expectations*" (original emphasis). This is based upon the evidence the authors gathered indicating that students "look to the same-sex parent in forming their educational expectations" (Wells et al., 2011, p. 19). Other researchers, including Osipow and Fitzgerald (1996) came to this conclusion as well, stating, "Gender is clearly one of the most powerful influences on vocational behavior" (Domenico & Jones, p. 3).

The Mother's Influence

While the family as a whole is an important factor to consider when examining children's education and occupation outcomes, even more can be learned by examining

the influence of each parent individually, especially when gender is considered.

Examining each parent's influence individually is especially relevant as women are earning degrees and entering the workforce in greater numbers than before. As early as the 1970s social scientists were realizing that it was not enough to use only the father's characteristics in analysis. Early studies such as Weishaar, Green and Craighead's (1981) found distinct differences in influence along gender lines. They explain, "A closer look at the role of mothers as influencers revealed an interesting difference by gender. While there were very few males who were influenced by mothers, 75% of those who cited mother as an influencer indicated she was a homemaker. Conversely, 76% of the females influenced by their mothers indicated that she was presently working outside the home, more often full time" (Weishaar, Green & Craighead, 1981, p. 69).

Rosenfeld's (1978) study was one of the first to approach this topic of women's intergenerational occupational mobility in a radically new way. While previous papers "defined women's intergenerational mobility in the same way as men's is usually defined, i.e., as movement from father's to respondent's occupational category," Rosenfeld (1978) made the case that the mother's occupation should be studied as well. She argued that there were three different reasons why the mother's occupation is an important factor; each of which has relevance to my research. In brief, her reasons are (1) that the inclusion of the mother "provides a better measure of family socioeconomic status"¹, (2) the importance of "an adult work role model", and (3) "when examining mobility in an occupational structure differentiated by sex, it is necessary to examine intergenerational

¹ This takes into account that when considering the fathers employment constant, women today can work for a variety of reasons, including preference or financial necessity. It is worth mentioning that this pattern fits most with white, upper-class idea.

mobility while holding sex of occupational incumbents constant” (Rosenfeld, 1978).

Rosenfeld’s (1978) research is valuable in that it differentiates between whether it is the mother’s level of occupation that has an effect on the daughter, or whether it is simply the fact that she is employed outside of the home. Her conclusion was that both matter: “Whether or not the mother worked outside the home and what occupation she held, given that she was employed, affected daughters’ location” (Rosenfeld, 1978).

More recent studies have indicated the importance of the mother’s influence as well. “Wahl and Blackhurst (2000) indicate children’s career aspirations are more closely related to parental occupations. Among adolescent females in particular, career choice is strongly influenced by the mother’s occupation” (Burlin 1976; Wahl & Blackhurst, 2000 as cited in Domenico & Jones, p. 3). Signer and Saldana’s (2001) study finds the correlation between mothers’ occupation and female students’ aspirations to be stronger than the correlation with fathers’ occupation, explaining that this might be accounted for by the mother’s traditionally greater presence in the home (as cited in Domenico & Jones, p. 3). “Adolescence [then] would be an ideal time to study the career development of young women, as many changes occur during this time that strongly influence the formation of career aspirations² and preferences” (Watson et al., 2002 as cited in Domenico & Jones, p. 3).

The literature widely recognizes this influence a mother has on both her daughter’s educational expectations and occupational aspirations. What is less clear, however, is how this influence occurs. A variety of hypotheses exist in answer to this

² “Career aspirations represent an individual’s orientation toward a desired career goal under ideal conditions. More simply stated, career aspirations ‘provide information about an individual’s interests and hopes, unfettered by reality’ (Hellenga, Aber & Rhodes, 2002, p. 200; Rojewski, 1996 as cited in Domenico & Jones, pg. 3).

question, but most can be generalized into two distinct groupings. One can be termed the “Role-Model Hypothesis” in which daughters directly pattern their aspirations and expectations for education and occupation after their mothers’ achievements. The other involves a more indirect influence in which mothers influence daughters’ grades, which in turn influence/predict future aspirations. I will refer to this as the “Grades Hypothesis”. Before discussing my two competing hypotheses in detail, it is useful to have a thorough discussion of the sociological theories that shape each.

Social Structure and Personality Framework

As mentioned above, the study of the unique relationship between mothers and their daughters has been examined since the beginning of the exploration of the sociology of the family. The family has long been a research topic because of its position as a social institution as defined by Talcott Parsons. According to functionalism, these “social institutions are interrelated systems of social norms and roles that satisfy social needs or functions and help solve social system problems” (Wallace & Wolf, 2005, p. 38). This does not fully address the question of why individuals within systems do what they do, however. A more nuanced approach is required to bridge this divide between the macro and micro worlds.

The social structure and personality (SSP) framework, which “is concerned with the relationship between macro-social systems or processes and individual feelings, attitudes, and behaviors,” does just that (McLeod & Lively, 2006, p. 77). This framework contends that the hierarchy of macrostructures under which an individual operates plays an important role in the life of the individual, especially in terms of their

interaction with social systems (McLeod & Lively, 2006, p.77). Using an SSP framework allows “researchers [to] attempt to trace the processes through which components of the social system influence individuals and through which individuals affect social systems” (McLeod & Lively, 2006, 78). This construct will be particularly useful in terms of my research because it will allow me to trace how the components of a social systems (family; women’s work) influence an individual (a daughter) and other social systems (daughter’s career aspirations – labor force participation).

Gender Role Socialization

The role model hypothesis is based upon the classic idea of gender role socialization, which begins to have an effect early on in children’s lives. Eccles (1987) notes parents and other adults “have sex-typed beliefs regarding boys’ and girls’ abilities, and that they communicate these beliefs to boys and girls through various subtle and explicit behaviors” (p.156). Their encouragement of gender-typed behavior reinforces it. “By age five, children have clearly defined gender-role stereotypes regarding appropriate behaviors and traits, and appear to monitor their behaviors and aspirations in terms of these stereotypes (Huston, 1983, Montemayor, 1974, Williams, Bennet, & Best, 1975, as cited in Eccles, 1987, p. 141). These stereotypes are often biased against women. “For example, because females are typically stereotyped as less competent than males, incorporation of gender-role stereotypes into one’s self concept could lead girls to have less confidence in their intellectual abilities than boys (Broverman, Vogel, Broverman, Clarkson & Rosenkrantz, 1972, Parsons, Ruble, Hodges & Small, 1976, as cited in Eccles, 1987, p. 145). Less confidence can lead to lowered expectations and perceived

difficulty in accomplishing the same things as boys (Eccles, 1987, p. 145). This gender typing influences not only perceptions of academic abilities but ideas about future occupations as well.

“In American society, there is a pronounced gender-typing of occupations with the result that most people ‘know’ which jobs are feminine and which are masculine, and which may be appropriately filled by either men or women” (Kenkel & Gage, 1983, p. 130). We assume that boys and girls learn this through socialization and the observation of significant male and female role models in their lives. This is in contrast to the essentialist position on gender, which asserts that there are inherent biological differences between men and women that make their occupations naturally different. These early adolescent observations of gender roles play out in later decisions. For example: “college males rate money, status, freedom, and the opportunity to be a leader as more important job characteristics than women, while women rate the opportunity to help other, work with people, and be creative as more important than males” (Lyson, 1984, cited in Eccles, 1987, p.150).

The role model hypothesis says that these gender roles that affect boys and girls are learned through socialization, primarily by observation along gendered lines. In my research, the role model hypothesis suggests that interests in different sex-typed occupations are not inherently understood at birth, but are instead learned through observation of parents. Woelfel and Haller (1971) explain how parents act as role models: “Parents also affect the schooling of their children indirectly, by molding their occupational aspirations and socioeconomic aspirations. Parents set certain lifestyle standards that the child incorporates when he or she chooses an occupational career, and

they put different levels of pressure on their children to perform well in school” (as cited in Kalmijn, 1994, p. 260).

In this case of the role model hypothesis, parents in general are important, but what about mothers in particular? In past years the mothers influence in terms of socialization was seen primarily in terms of her traditional role in the home, with her spending the majority of the time with the children. Over time though, there has been a shift toward more egalitarian sex-role attitudes (Kalmijn, 1994, p. 262). As this has occurred, more value has been placed on women’s economic roles and occupational status (Kalmijn, 1994, p. 262). “As a result, mothers may be an increasingly important role model of socioeconomic achievement for their children, particularly for their daughters” (Kalmijn, 1994, p. 262). Daughters learn what women can or should do through observation of how their mother’s behavior is reinforced, which shapes their ideas about how they want to do gender. If we assume that parents act as examples for their children, according to the role-model hypothesis, “a parent with more education and greater earnings acts as a model to encourage similar behavior by his or her offspring” (Haveman, Wolfe & Spaulding, 1991, p. 134).

The Role-Model Hypothesis

In the study of the factors that influence women’s decisions to pursue various careers, “one of the factors that has clearly emerged as important is the influence of role models” (Almquist & Angrist, 1972; Burlin 1976; Douvan, 1976; Psathas, 1968; Ridgeway, 1978; Tangri, 1972, as cited in Wishaar, Green & Craighead, 1981, p. 68).

Burlin (1976) deduced that career choices and aspirations in women were significantly influenced by the mother's type of work. This reiterates the importance of mothers as "role models in development of their daughters' career goals and aspirations (Domenico & Jones, p. 3). It is interesting that although more women work today than when many of these articles were written, it is still difficult for females to find appropriate vocational role models (Weishaar, Green & Craighead, 1981, p. 68).

When these role models are found however, Weishaar, Green and Craighead (1981) note that they typically perform two functions: "They demonstrate behaviors which are to be imitated, and they provide information regarding the likely consequences of those behaviors" (p. 68). The information providing aspect of role models is important in terms of decision-making. Further research by Krumboltz & Schroeder found that "an individual will be more likely to express a preference for a particular choice if he or she has been positively reinforced for behaviors associated with that choice or has observed a valued model being positively reinforced for engaging in behaviors associated with that choice" (Weishaar, Green & Craighead, 1981, p. 69). A caveat to this though is that what is reinforced is often determined by the existing sex-role ideology or belief system of the mother.

This reinforcement of belief systems from mother to daughter does not have to be directly perceived. Jean Lipman-Blumen (1971) notes that these belief systems "are transmitted implicitly rather than explicitly; they usually guide the behavior of women silently without their being consciously aware of it" (p. 34). Mothers may not even be aware of the behaviors they are giving off while at the same time daughters may not be aware of the impact. My research examines the degree to which this is true by examining

how mothers' reported beliefs and attitudes match up with their daughters' perceptions of these opinions. Lipman-Blumen (1971) adds however, that these transmissions occur primarily at a young age, with the resulting belief system influencing the rest of their life pattern (p. 35). The change in life pattern that is based on observed role models relates to what Gottfredson (1981, 1996) terms the theory of circumscription and compromise. This theory suggests that "the more [that] young women see women working, the more likely they are to view female employment as normative" (as cited in Baird, 2008). Thus, a relationship exists between the number of workingwomen role models and the degree of occupational aspiration. "Furthermore, circumscription and compromise theory contends that young women's career-relevant decisions are intricately tied to their beliefs about what is appropriate behavior and appropriate jobs for boys/men and girls/women" and make accommodations in their decisions as a result of these beliefs (as cited in Baird, 2008). These beliefs are learned through socialization and the observation of role models.

Social Capital Theory

In contrast to the role model hypothesis, which emphasizes the passive influence of the mother based upon her characteristics, is the grades hypothesis. The grades hypothesis emphasizes a more active transmission of influence from mother to daughter, and is based upon the effect those mothers' actions have on daughters. Central to this is the idea of transmission of social capital. Social capital can be traced back to "Pierre Bourdieu, who defined the concept as 'the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized

relationships of mutual acquaintance or recognition” (Bourdieu 1985, p. 248, as cited in Portes, 1998). More simply put, involvement and participation in groups can positively influence both individuals and the communities to which they belong. Empirical literature has cited it as a predictor of both academic performance and occupational attainment, among other things (Portes, 1998). Portes (1998) notes “Bourdieu’s definition makes clear that social capital is decomposable into two elements: first, the social relationship itself that allows individuals to claim access to resources possessed by their associates, and second, the amount and quality of those resources.”

These two elements can both be useful in considering how mothers influence their daughters’ educational and occupational aspirations. First, let us look at Bourdieu’s contention that it is the “social relationship itself that allows individuals to claim access to resources possessed by their associates.” So in terms of my research, we assume that it is the socially defined relationship between parent and child that generates the advantage for the child. Other researchers have focused on the question of the effect of “parental work on children’s cognitive and social development” as well (Portes, 1998). Parcel & Menaghan (1994) concluded, “that parental intellectual and other resources contribute to the forms of family capital useful in facilitating positive children outcomes...” (as cited in Portes, 1998). Following this logic, we would expect that greater achievement by parents would foster an increased value in the achievements of their children.

Bourdieu’s explanation of the second element that comprises social capital, the “amount and quality of those resources” possessed by those that the individual knows, is especially useful in terms of my research. He explains that in the case of transmission of resources in relationships, the quantity and quality of the social capital that one possesses

is important. This relates to what other social scientists have termed the ‘human capital model’. Becker (1981) and Becker and Tomes (1986) note that both “human wealth (parents’ education and their time, for example) and nonhuman wealth (income or assets)” influence the amount of social capital they can provide children (as cited in Haveman, Wolfe & Spaulding, 1991, p. 134). “The greater the value of parental resources, the larger the investment in children and the greater the children’s educational attainment” (Haveman, Wolfe & Spaulding, 1991, p. 134).

Parents can use these resources to provide more for their children in a variety of ways. Eccles (2005) states, “Parents with higher education make sure their children are exposed to lots of educational opportunities in their communities” (see Furstenberg et al., 1999). For example, highly educated parents in the US enroll their children in music lessons, science and computer programs, and educationally relevant summer camps. They are also more likely to enroll their children in the best private schools and to get tutoring help if their children start to have difficulty in school. So we expect that well educated moms in higher status occupations are more likely to be able to provide these additional economic resources to their daughters.

Some of the resources that well educated moms in higher status occupations provide are more social in nature. Baker and Stevenson (1987) found several things that distinguished the actions of more educated mothers. “Educated mothers tended to have more information about the school and were more likely to take action to address their child’s school problems than less educated mothers. Also, educated mothers selected more college preparatory courses for their child’s high school curriculum than did less educated mothers” (Baker & Stevenson, 1987, p. 1356). From this we can assume that

more educated mothers have both a better understanding of the education system and provide higher levels of social capital. These higher levels of social capital increase the chances of success for the children.

The Grades Hypothesis

The other primary grouping of hypotheses about the way parents influence their children's educational and occupational outcomes that I will be examining is more indirect than the Role Model Hypothesis. In this case, parents own education and occupation are seen to influence students' current test scores and grades, which in turn predict future aspirations. "Probably the most prominent and direct explanation of the link between parents' education and their children's academic achievement relies on the assumption that parents learn something during schooling that influences the ways in which they interact with their children around learning activities in the home" (see Eccles, 1993; Brody et al., 1995; Corwyn & Bradley, 2002; Hoff et al., 2002; Davis-Jean et al., 2003; Davis-Kean, 2005, as cited in Stevenson & Baker, 1987, p. 191). Supporters of this perspective contend that what the parents learned in school in turn influences their "skills, values, and knowledge of the educational system" (Stevenson & Baker, 1987, p. 191). Knowledge of the education system is valuable because parents are then better able to help their children navigate the system with success.

What exactly distinguishes the actions of those parents with higher education levels? Stevenson and Baker (1987) point out two distinct differences. First they emphasize Hoff's (2003) point that "parents with more education both talk to, and use more complex and varied language with their children, which in turn, predicts better

language and reading skills throughout childhood” (p. 192). With this logic, we would expect those parents who are more educated to have offspring with higher test scores because of influences of the home environment. Kohn (1969), however, argues that this is dependent on the nature of the parents’ jobs. He “argued that parents in working class jobs are more likely to value obedience and less likely to value intellectual curiosity than parents in professional jobs” (Stevenson and Baker, 1987, p. 193). This distinction in occupational status is a primary focus of my research. A lack of value placed on intellectual curiosity (resulting from parental occupation) likely indicates that children are not exposed to many intellectual activities at home or not positively reinforced for intellectual work at home, which prevents children from developing advanced intellectual skills (Stevenson and Baker, 1987, p. 193). This difference falls under what Anger and Heineck (2010) discuss when reviewing what the literature terms the “nurture” transmission of cognitive abilities. Higher educated adults “nurture” an environment of intellectual curiosity in the home, which in turn raises the likelihood of the child’s academic success.

The second thing that Simon and Baker (1987) note as distinguishing more highly educated parents from those that are less educated is that “parents with more education also have higher expectations for their children’s education, which, in turn, predict greater educational attainment for their children” (Alexander et al., 1994, as cited in Stevenson & Baker, 1987, p. 192). A study by Bandura et al., (1996) demonstrated that higher academic self-efficacy existed in students whose parents had higher expectations (Zhang et al., 2010, p. 479). When parents themselves have completed more education and have more confidence in their own abilities, expectations for children rise. But, the

authors note that potential genetic factors must be taken into account when explaining the achieved education levels of parents. They explain that higher levels of education of parents are likely influenced by what they term genetic endowments, following a more “nature” based perspective. These endowments are linked to “intelligence, motivation and temperament.” If we suppose that these endowments are passed on genetically to children, we assume that their children will achieve the same level of education and should see this reflected in their expectations. Stevenson & Baker (1987) sum it up completely by saying: “According to this model, distal parent characteristic such as genetic endowment, education, cultural group membership, occupation, income, etc., influence their children’s education attainment through their influence first on parents’ beliefs and behaviors, which, in turn, influence the children’s engagement in a wide variety of activities. This engagement, over time, determines the children’s education attainments” (p. 193). The influence on children’s outcomes is not direct but related to a variety of key factors.

Wigfield and Eccles (2002) discuss the importance of parents’ expectations of adolescents’ academic achievement as well. They note that parents are just one aspect of the social context that influences individuals (Zhang et al., 2010, p. 479). This social context continually reinforces and influences the individual’s expectations, which then “influence the individual’s academic performance, persistence, and academic subject choice” (Eccles & Wigfield, 2002 as cited in Zhang et al., 2010, p. 479). Support increases self-perception, which increases performance. A related subject that Wigfield and Eccles (2002) explore is how perceptions of parental expectations that students have can be just as influential in determining students’ academic achievement (Zhang et al.,

2010, p. 480). This is why my research considers what the female students' perceptions of their mothers' opinions are – they are very likely different. Eccles and Wigfield (2002) also make a point of distinguishing that educational expectations are influenced differently by gender, noting, “the effects of parental expectations were greater between mother and daughters than between fathers and sons” (pg. 480). Zhang and colleagues (2010) suggest that this reinforces the belief that “females are more sensitive to their parents' expectations than males”. This is why I have chosen to focus on the mother-daughter transmission of influence. Girls have been shown to be more sensitive to parental expectations, and of their parents, their mothers seem to influence them more.

As the discussion of the two theories above indicates, there are multiple explanations of the influence a mother has on her daughter's educational and occupational aspirations. Empirically, we know that the mother is an important factor to consider when examining the outcomes of the daughter. The theoretical question that remains, however, is whether the passive effects of who the mother is or the active effects of what she does for her daughter are more important. This question will be answered by my study of whether the role model hypothesis or the grades hypothesis, discussed in detail below, explains the relationship better.

Exploring the Hypotheses

The existence of multiple hypotheses in the literature on women's educational and career aspirations is well documented. Research has been conducted since the 1970s on each potential hypothesis, especially as the workingwoman has become the norm rather than the exception. The primary result of these studies is the emergence of a widely

accepted view that mothers (along with a variety of other factors) influence their daughters' education and career aspirations. Mothers' education and occupation have been identified by many studies as primary factors of influence. What has not been fully explored however is just how this influence occurs. "Until recently, most researchers looked at a very limited set of the wide range of plausible hypotheses and they have typically done so in a piecemeal fashion. Thus, few researchers have based their research on comprehensive models that provide a full picture of the processes and steps through which parents' education might actually influence children's academic achievement" (Stevenson & Baker, 1987, p. 193). Meaning that each hypothesis has primarily been explored independently, with research focusing on only one method of transmission instead of engaging in a comparison. Thus, it is still unclear whether the influence is more congruent with the role-model hypothesis or the grades hypothesis. I believe that this is an important question to examine because of the gendered achievement gap that still exists. Through my research I hope to examine which hypothesis explains more about the correlation of a mother's education and occupation with her daughter's resulting aspirations. Discovering this will suggest which hypothesis is more relevant to today's female student. This could help policy makers, teachers, and parents learn about the most effective method for the encouragement of female students toward achieving higher levels of education and pursuing higher-status, nontraditionally female, occupations.

METHODOLOGY

Sample

The study from which my data comes is the Educational Longitudinal Study (ELS), 2002: Base Year, which was conducted by the United States Department of Education and the National Center for Education Statistics. The ELS, 2002 used a nationally representative sample of 10th grade students in both public and private schools to examine “critical transitions experienced by students as they proceed through high school and into postsecondary education or their careers” (U.S. Department of Education). The participants were re-interviewed in 2004, 2006, and 2012 to provide additional information relating to their high school, post-secondary, and workforce experiences.

The data were collected through a two-stage sample selection process. Stratified probability proportional to size was used to select the sample of 1,221 United States public, Catholic, and private schools from the 50 states and the District of Columbia, 752 of which ultimately participated. Schools that fit under the following categories were excluded from the sampling frame: schools with no 10th grade; schools with no enrollment; ungraded schools; Bureau of Indian Affairs (BIA) schools; special education schools; vocational schools not enrolling students directly; schools that are detention centers or correctional facilities; Department of Defense (DOD) schools outside the United States; and closed public schools (ELS User Guide). Within the selected schools a stratified systematic sampling (based upon race) of 10th grade students was conducted using lists provided by the schools to select, on average, 26 participants. For each participant in the selected sample, student-level data (comprised of surveys from each

student, one parent, and teachers) and school-level data (comprised of surveys from school administrators and the head librarian) were collected. I will be using the student-level data, comprised of 15,362 student participants. Half ($N = 7,716$) of these were women, and thus qualified for my analysis.

The student survey responses provided information about the “student's background, school experiences and activities, plans and goals for the future, employment and out-of-school experiences, language background, and psychological orientation toward learning” (U.S. Department of Education). The parent survey responses from the student-level data indicate “parental aspirations for the child, home background and the home education support system, the child's educational history prior to 10th grade, and parental interactions with and opinions about the student's school” (U.S. Department of Education). These survey responses will allow me to compare mothers’ careers to female students’ expectations for academic achievement and future career aspirations.

Dependent Variables

Daughter’s Occupational Aspiration at Age 30 was determined from the response to the student survey question “Write in the name of the job or occupation that you expect or plan to have at age 30.” Responses were coded into one of seventeen categories. I narrowed these categories further by combining categories logically based upon similarities and their codebook description. The final categories were coded: (1) Other (e.g., craftsperson, farmer, construction, military); (2) Management (e.g., office manager, school administrator, small business owner); (3) Service or Technical (e.g., beautician,

waitress, computer programmer); (4) Clerical or Operative (bank teller, secretary, machine operator, taxi driver); (5) Doctor, Lawyer, PhD; (6) Professional or Sales accountant, nurse, librarian, actor); School Teacher; and (8) Don't Know.

Daughter's Academic Aspirations were determined from the question posed to students "As things stand now, how far in school do you think you will get?" I further combined the responses and coded them: (1) Don't Know; (2) Less than College; (3) Graduate College; (4) Masters or Beyond.

I saw the students' performance on standardized tests as a potentially important factor for predicting future aspirations. The questions administered on the ELS:2002 math and reading assessment tests were selected from questions previously used in previous assessments, including: NELS:88, NAEP, and PISA (ELS User Guide, p. 38). The "math tests contained items in arithmetic, algebra, geometry, data/probability, and advanced topics and were divided into process categories of skill/knowledge, understanding/comprehension, and problem solving" (ELS User Guide, p.38). "Reading tests consisted of reading passages of one paragraph to one page in length, followed by three to six questions based on each passage...Questions were categorized as reproduction of detail, comprehension, or inference/evaluation" (ELS User Guide, p.38). The quartile of performance was determined from the average of the daughter's math and reading standardized scores on the ELS:2002.

Independent Variables

Mother's Occupation was determined from the parent survey. Parents were initially asked to indicate whether they (if they were female) or their spouse (if they were male)

had or currently held employment. If the response to the question was yes, the respondent was asked to select the best description of the position from 18 listed categories. (If a response was not given, data from the written-in responses of the student survey was coded and used). I furthered combined these into 9 categories: Skilled Labor; Management; Protective Service; Homemaker; Service or Technical; Clerical or Operative; Doctor, Lawyer or PhD; Professional; and School Teacher.

Mother's Highest Level of Education was determined from the parent survey. The responses were coded: (1) Did not finish high school; (2) Graduated from high school or GED; (3) Attended 2-year school, no degree; (4) Graduated from 2-year school; (5) Attended college, no 4-year degree; (6) Graduated from college; (7) completed Master's degree or equivalent; (8) Completed PhD, MD, JD, or other advanced degree.

Control Variables

Race/ethnicity of daughter was included as a background control variable. Categories included: Hispanic, Multiracial, White, Black and Asian.

It is possible that the daughters' understanding of their mothers' expectations regarding academic and occupational goals is associated with their responses. The daughters' perceptions can be an important indicator of how the mother influences the daughter. Therefore, the analysis included two perception factors: The daughters' perceptions of their mothers' desire for them after high school, and the daughters' perceptions of how far in school their mothers desired them to go. The question, "What do the following people think is the most important thing for you to do right after high school?" provided separate lines for responses for the student's mother, father, friends,

close relative, school counselor, favorite teacher, and coach. The indicated perception of the mothers' preference was categorized: Don't Know, Military or Trade School, College, Full Time Job, Get Married, and Do What I Want. The question, "How far in school do you think your mother and father want you to go?" provided columns for separate responses for each parent. The students' indicated responses to the question of how far their mother wants them to go in school were categorized: Don't Know, Less than College, Graduate College, Obtain Master's Degree, and Obtain PhD, MD or JD.

ANALYTIC STRATEGY

First, means and standard deviations were calculated for all variables to assess significant differences among the population. Next, a series of multinomial logistic regressions models were run to compare the educational and occupational aspirations of female students to their mothers' educational and occupational status. "Multinomial logistic regression is used to model nominal outcome variables, in which the log odds of the outcome are modeled as a linear combination of the predictor variable" (Stata). I used the "mlogit" command in the statistical software package Stata 12, which fits maximum-likelihood multinomial logit models. The "rrr" option was added to the "mlogit" command so that the regression results were displayed in terms of relative risk ratios, which are "the ratio of probability of choosing one outcome category over the probability of choosing the baseline category" (Stata). The Stata command "cluster" was added to the multinomial logistic regression to control for the possible correlation between student responses from the same school.

In Model 1, to address future aspirations, daughters' occupational aspirations were compared based upon the independent variable of mothers' occupation, controlling for (a) race, (b) daughters' test score quartile, and (c) the daughters' perception of their mothers' desire for what they should do after high school. The effect of clustering by individual school was also accounted for in the model. 87.13% of participants answered all measures of interest. Daughters' occupational aspirations was the variable missing the most observations at 725 (9.4%) (Missing data, legitimate skips, and not administered are all counted in this category).

Model 2 addressed the academic aspirations of the daughters. The independent variables of the model were the different categories of mothers' educational attainment. This model included controls for (a) race, (b) daughters' test score quartile, and (c) the daughters' perception of how far in school their mothers' wanted them to go. As in Model 1, the potential for clustering by individual school was accounted for. Mediation was tested for using Baron & Kenney's (1986) method. First, I tested whether mothers' achievement predicted test scores. Second, I tested whether mothers' achievement predicted daughters' aspirations. Third, I tested whether mothers' achievement predicted daughters' aspirations net of daughters' test scores.

Model 3 used mothers' occupation categories as the independent predictor variables of the daughters' standardized test score quartile. Controls for the model included (a) race, and (b) the daughters' perceptions of their mothers' desire for them after high school. As in the previous models, the effect of clustering by school was accounted for. 88.47% of participants answered all measures of interest. The only variable in the model missing data was the daughters' perception of the mothers' desire for their daughter after high school. 890 responses (11.53%) were missing.

Model 4 predicted daughters' test score quartile based upon the mothers' educational attainment, controlling for (a) race, and (b) the daughter's perceptions of how far in school their mothers wanted them to go and possible clustering by school. The only variable in this model with missing data was the daughter's perception of how far in school their mothers wanted them to go. 1,010 (13.09%) of responses were missing a response to this variable.

No predictable pattern of missing data was determined by conducting missing data diagnostics in Stata 12. Listwise deletion was therefore used throughout, with missing data taken out by default.

RESULTS

Characteristics of Female Student Respondents to the Education Longitudinal Study (ELS), 2002 (N = 7,716)

Daughter's Outcomes	Mean/Proportion (SD)
<i>Expectations for Education</i>	
Don't Know	.09
Less than High School	.01
High School or GED	.04
Two-Year Program	.05
Attend College	.03
Graduate College	.34
Master's Degree	.22
PHD/MD/JD	.22
<i>Occupation at Age 30</i>	
Skilled Labor	.01
Management	.03
Protective Service	.01
Homemaker	.002
Service or Technical	.06
Clerical or Operative	.004
Doctor, Lawyer, PHD, etc.	.27
Professional	.22
School Teacher	.04

Mother's Key Measures	Mean/Proportion (SD)
<i>Mother's Level of Education</i>	
Less than High School	.13
Graduated High School	.27
Two-Year School, No Degree	.12
Graduated Two-Year School	.10
College, No Degree	.10
Graduated College	.18
Masters Degree	.07
PHD, MD, Equivalent	.02
<i>Mother's Occupation</i>	
Skilled Labor	.07
Management	.12
Protective Service	.01
Homemaker	.09
Service or Technical	.21
Clerical or Operative	.20
Doctor, Lawyer, PHD, etc.	.04
Professional	.18
School Teacher	.06
Education	Mean/Proportion (SD)
<i>Standardized Testing Quartile</i>	
First Quartile	.22
Second Quartile	.25
Third Quartile	.27
Fourth Quartile	.26

The characteristics of female student respondents to the Education Longitudinal Study (ELS), 2002 provide a variety of information that can be used for analysis. In terms of the Daughters' Outcome variables, both their Expectations for Education and their Expected Occupation at Age 30 were measured.

Expectations for Education

Of the 7,716 female respondents, the greatest proportion (78%) expect to at least graduate from a four-year college. Specifically, approximately one-third (34%) expect to graduate college. Even more plan on continuing their education and receiving either a Masters Degree (22%) or other more advanced professional degree (22%). The lowest proportion of female students (1%) indicated that they did not expect to finish high school. 9% of female students indicated that they did not know what their expectations for education were.

Occupation at Age 30

The greatest proportion of female respondents (27%) indicated that their desired occupation at age 30 would be a Doctor, Lawyer, PhD, or other advanced professional. Closely following that, 22% of daughters indicated their desire to be a Professional (e.g., accountant, nurse, librarian, actor). Each of the other occupation outcome categories had many fewer responses proportionally, each representing less than 10% of students' responses. Less than 1% of daughters indicated that they would like to be either a Homemaker or have an occupation in the Clerical or Operative field (e.g., bank teller, secretary, machine operator, taxi driver).

The characteristics of the female students' mothers can be examined as well. The key measures of Mother's Level of Education and Mother's Occupation are important independent variables in terms of examining their influence on the daughters' outcome variables.

Mother's Level of Education

40% of the mothers of the 7,716 female students did not complete any form of post-secondary education, completing high school or less education. Of the 60% of mothers who continued on to post-secondary education 22% either attended or graduated from a two-year school. An even larger proportion of mothers, 28%, either attended or graduated from college. The smallest proportion of mothers held degrees beyond a Bachelors, with 7% and 2% holding Masters or terminal degrees, respectively.

Mother's Occupation

The majority of mothers had occupations that fell into the Service or Technical (21%) (e.g., barber, waitress, dental technician, computer programmer), the Clerical or Operative (20%) (e.g., bookkeeper, mail carrier, machine operator), or Professional categories (18%) (e.g., accountant, artist, engineer, politician). The occupations with the proportionally fewest mothers were the Protective Service (1%) (e.g., police, military) and Doctor, Lawyer, PhD, etc. (4%) category. Notably, 9% of mothers had no paid occupation and identified as unemployed or as a homemaker.

This multinomial logistic regression tests the hypothesis that mothers' occupation is a significant variable in determining daughters' career aspirations. In the model, results are compared to the baseline comparison group of the mother holding an occupation that is clerical or operative in nature (independent variable) and the daughter aspiring to be a doctor, lawyer, or PhD.

This model draws upon the large sample size of 6,723 female 10th grade students. The sample size is not the full 7,716 due to missing data. Responses to the question regarding daughters' occupational aspirations were missing, legitimately skipped, or not administered in 725 (9.4%) cases. The large likelihood ratio chi-square of 29,903.35, which has a p-value of $< .0001$, indicates the model as a whole fits significantly better than an empty model without the variables of Mother's Occupation, Daughter's Test Quartile, Daughter's understanding of their mother's aspirations for them, and race as predictors. This indicates that one or more of the independent or control variables explains some of the variation in daughters' aspirations. The results would occur randomly in less than 0.01% of cases.

The relative risk is the ratio of the probability of choosing one outcome category over the probability of choosing the baseline category. This model yields regression coefficients that are relative risk ratios for a unit change in the predictor variable. The statistically significant relative risk ratios (at p-value 0.05 or less) are as follows:

When the mother is an MD/JD/PhD, the odds that the daughter aspires to a service or technical occupation are 0.25 of the odds that the daughter wants to be an MD/JD/PhD.

The relative risk ratio switching from a mother with a protective service occupation vs. a clerical/operative occupation is 4.03 for daughters aspiring to clerical or operative occupations vs. MD, JD, or PhD. In other words, the expected risk of desiring to have a clerical/operative occupation is higher for daughters whose mothers have a protective service occupation.

The relative risk ratio for having a mother who is a schoolteacher vs. one who is a clerical/operative is 1.47 for daughters who aspire to a professional or sales occupation vs. being an MD, JD, or PhD.

The relative risk ratio of switching from having a mother with a clerical or operative occupation to a professional occupation is 0.81 for daughters who don't know their desired future occupation vs. those who wish to be MD, JD, or PhD's. Therefore, daughters whose mothers are professionals as opposed to clerical/operatives are less likely to not know what they want to do.

When running the models, I had initially included Test Quartile as a control measure. What was most notable about the results was that the daughters' test quartile score was statistically significant in most cases. The results demonstrate that as the daughter's test score goes up, the more likely she is to want to be a MD, JD, PhD over anything else. This makes sense as these professions generally require high test scores as prerequisites to entry. As the table indicates, Test Quartile is a statistically significant predictor for all but one occupation outcome variable (school teacher) for the daughter. This indicates that the Daughters' Test Quartile may be an important factor in predicting daughters' career aspirations. This prompted the running of two additional models that sought to determine if it is a mediating variable. Model 3 and Model 4 sought to

determine whether the mothers' occupation or academic achievement (independent variable) was influencing daughters' test quartile (mediating variable), which in turn influences daughter occupational and educational aspirations (dependent variable). The results of these models are found in Table 3 and Table 4.

Table 2 *Multinomial Logistic Regression, Daughter's Academic Aspirations*

	Don't Know	Less than College vs. Graduate College	Masters and Beyond
	Odds Ratio (95% C.I.)	Odds Ratio (95% C.I.)	Odds Ratio (95% C.I.)
<i>Mother's Education</i>			
Incomplete High School	4.39** (1.53-12.64)	1.26 (0.98-1.62)	0.91 (0.65-1.26)
Two Year No Degree	1.15 (.29-4.59)	0.94 (0.75-1.18)	0.88 (0.66-1.17)
Graduated with Two Year Degree	0.99 (0.19-5.06)	0.88 (0.67-1.12)	1.07 (0.81-1.42)
Some College, No Degree	1.84 (0.52-6.51)	0.73* (0.56-0.94)	0.80 (0.60-1.08)
Graduated College	0.96 (0.18-5.05)	0.85 (0.69-1.05)	1.04 (0.82-1.33)
Masters Degree	0 (0)	0.68* (0.50-0.93)	1.16 (0.84-1.61)
PhD, MD, or equivalent	3.12 (0.33-29.65)	0.57* (0.34-0.96)	1.25 (0.73-2.15)
<i>Daughter's Test Quartile</i>			
Test Quartile	0.11*** (0.05-0.29)	0.61*** (0.56-0.66)	1.07 (0.98-1.18)
<i>N</i>	6,142		
χ^2 : <i>df</i>	5,173.38; 48		

Note. Statistics control for race and daughters' understanding of their mothers' educational aspirations for them

*p < .05, ** p < .01, *** p < .001

The likelihood ratio chi-square of 5,173.38, with a p-value < 0.0001 indicates that the model as a whole fits significantly better than an empty model without the variables of Mother's Education or Daughter's Test Quartile as predictors. The high-value of the chi-square indicates that there is a low probability that the results are due to random chance alone. The p-value less than 0.0001 indicates that deviations between observed and expected values in this experiment are less than .01% likely to occur by chance – indicating that we can reject the null hypothesis, that daughter's academic aspirations

have nothing to do with their mother's academic achievement. This model then displays that there is in fact a relationship between mother's academic achievement and daughter's academic aspirations. The statistically significant relative risk ratios are as follows:

The relative risk ratio for switching from the mother not completing high school to the mother graduating high school is 4.39 for daughter's not knowing their academic aspirations vs. wishing to graduate college. Therefore, the expected risk of the daughter not knowing what her academic aspirations is lower for daughters whose mothers finished high school.

The relative risk ratio for switching from the mother completing high school to the mother completing a masters degree is $8.34e-06$ for daughters who don't know their academic aspirations vs. those wishing to graduate college. In other words, the expected risk of the daughter not knowing her academic aspirations is lower for those whose mother completed a masters degree.

The relative risk ratio for a one-unit increase in the variable Test Quartile is 0.11 for the daughter not knowing what her academic aspirations are vs. a desire to graduate college.

The relative risk ratio for switching from the mother having some college, but no degree to the mother graduating high school is 0.73 for daughter's aspiring to less than college vs. graduating college. Therefore, the expected risk of a desire to complete less than college is greater for those whose mothers did not complete any college.

The relative risk ratio for switching from the mother having completed high school to having a masters degree is 0.68 for daughters who aspire to less than college vs. graduating from college.

The relative risk ratio for switching from the mother having completed high school to the mother having a PhD, MD, or equivalent is 0.57 for daughters who aspire to less than college as opposed to graduating college. In other words, the expected risk of not wanting to graduate college is less for those with more educated mothers.

The relative risk ratio for a one-unit increase in the variable Test Quartile is 0.61 for the daughter who expects to finish less than college vs. graduating from college.

It is worth briefly discussing the extent to which including test quartile in the analysis explains the relationships. This was examined through models that predicted aspirations that did not have test quartile included as predictors. What I found was that not much changed. When test quartile was not included in the model that predicted daughters' aspirations based on mothers' occupation, there were five significant results. In contrast, in Model 1: *Multinomial Logistic Regression, Daughter's Career Aspirations*, which included test quartile as a predictor, there were four significant results. When test quartile was not included in the model that predicted daughters' aspirations based upon mothers' occupation level, there were seven significant results. In comparison, in Model 2: *Multinomial Logistic Regression, Daughter's Academic Aspirations*, there were four significant results versus. My results indicated that in most instances, the inclusion of test quartile strengthened the existing significant results. This indicates the existence of an indirect relationship between mothers' achievement and daughters' aspirations: mom's achievements predict test scores, and test scores predict aspirations.

Table 3: Multinomial Logistic Regression, Daughters' Test Quartile in Relation to Mothers' Occupation

	Lowest	Second	Fourth
	Quartile	Quartile	Quartile
	vs. Third Quartile		
	Odds Ratio	Odds Ratio	Odds Ratio
	(95% C.I.)	(95% C.I.)	(95% C.I.)
<i>Mother's Occupation</i>			
School Teacher	0.32*** (0.21-0.50)	0.50*** (0.36-0.70)	1.43** (1.13-1.81)
Skilled Labor	2.60*** (1.90-3.56)	1.62** (1.20-2.18)	0.89 (0.62-1.28)
Management	0.89 (0.69-1.16)	0.91 (0.72-1.14)	1.14 (0.92-1.41)
Protective Service	1.08 (0.53-2.17)	0.99 (0.51-1.91)	0.83 (0.41-1.69)
Homemaker	1.92*** (1.44-2.56)	1.31* (1.00-1.71)	0.83 (0.62-1.12)
Service Technical	1.27* (1.01-1.60)	1.01 (0.83-1.22)	0.95 (0.77-1.17)
MD, JD, PhD	0.70 (0.44-1.10)	0.60* (0.40-0.91)	2.25*** (1.60-3.16)
Professional	0.76* (0.59-1.00)	0.91 (0.73-1.13)	1.63*** (1.34-1.98)
<i>N</i>	6,826		
χ^2, df	1,080.70; 51		

Note. Statistics control for race and daughters' understanding of their mothers' occupational aspirations for them

* $p < .05$, ** $p < .01$, *** $p < .001$

The likelihood ratio chi-square of 1,080.70, with a p-value less than .001 indicates that the model as a whole fits significantly better than an empty model without the variable of Mother's Occupation as a predictor. The high-value of the chi-square indicates that there is a low probability that the results of daughter's test quartile score are due to random chance alone. The p-value less than 0.001 indicates that deviations between observed and expected values in this experiment are less than .1% likely to occur by chance. The null hypothesis, that daughter's test quartile scores have nothing to

do with their mother's occupation, can therefore be rejected. This model then displays that there is in fact a relationship between mother's occupation and daughter's academic aspirations.

The majority of the relative risk ratios in this model are statistically significant.

General trends are as follows:

The odds of the daughters' test scores falling in the first quartile as opposed to the third quartile is greater for those whose mothers' occupations fall into the Skilled Labor (2.60), Homemaker (1.92), or Service/Technical (1.27) category as opposed vs. those in the Clerical/Operative category. The odds of the daughters' test scores falling in the first quartile as opposed to the third quartile is lower for those whose mothers' occupation is either a school teacher (0.32) or professional (0.76).

A mother who is a homemaker (1.31) or employed in skilled labor (1.62) as opposed to a clerical/operative occupation is more likely to have a daughter whose test scores fall into the second quartile as opposed to the first quartile.

The odds of the daughter's test scores falling into the fourth quartile vs. the third quartile are greater for mothers' whose occupation is a school teacher (1.43), a professional (1.63), or a doctor, lawyer, professor, etc. (2.25) vs. a clerical/operative occupation.

Table 4: Multinomial Logistic Regression, Daughters' Test Quartile in Relation to Mothers' Education

	Lowest Quartile	Second Quartile	Fourth Quartile
	vs. Third Quartile		
	Odds Ratio (95% C.I.)	Odds Ratio (95% C.I.)	Odds Ratio (95% C.I.)
<i>Mother's Education</i>			
Incomplete High School	1.94*** (1.49-2.53)	1.36* (1.04-1.77)	0.60** (0.42-0.87)
Two Year No Degree	0.71** (0.56-0.91)	0.83 (0.66-1.03)	0.89 (0.71-1.12)
Graduated with Two Year Degree	0.58*** (0.44-0.75)	0.78* (0.62-0.98)	1.21 (0.96-1.54)
Some College, No Degree	0.46*** (0.35-0.62)	0.77)* (0.62-0.97)	1.24 (0.99-1.56)
Graduated College	0.40*** (0.31-0.53)	0.65*** (0.51-0.81)	1.84*** (1.52-2.23)
Masters Degree	0.28*** (0.17-0.44)	0.67* (0.48-0.94)	2.24*** (1.73-2.91)
PhD, MD, or equivalent	0.71 (0.38-1.32)	0.44* (0.22-0.86)	2.67*** (1.68-4.25)
<i>N</i>	6,706		
$\chi^2; df$	1,257.77; 45		

Note. Statistics control for race and daughters' understanding of their mothers' educational aspirations for them

*p < .05, ** p < .01, *** p < .001

This model used multinomial logistic regression to examine whether Mothers' Education predicted Daughters' Test Quartile. The likelihood ratio chi-square of 1,257.77, with a p-value < .0001, indicates that the model as a whole fits significantly better than an empty model without the variable of Mother's Education as a predictor. The p-value indicates that there is less than a .01% chance that these results would have been generated randomly, indicating that we can reject the null hypothesis (that there is no relationship between the variables). The base categories for comparison were mothers who graduated high school and daughters' test scores in the third quartile.

It is notable that almost every relationship in the model is statistically significant. Mothers' education seems to be an important predictor of daughters' standardized test score quartile. Some of the notable relationships are as follows:

The odds ratio of a mother who did not complete high school vs. graduated high school is 1.94 for daughters with test scores in the lowest quartile as opposed to the third quartile. In other words, mothers with the least education are the most likely to have daughters with scores in the lowest test quartile. The relative risk ratios decrease as the variable for number of mothers' years of education increases. The relative risk ratio of mothers with masters degrees vs. high school graduates is .28 for daughters in the lowest quartile as opposed to the third quartile. Mothers with more education in this case are less likely to have daughters in the lowest test quartile.

The same basic principles are true for daughters whose test scores fall within the second quartile as opposed to the third quartile. In general, as mothers' education increases, the likelihood that daughters' scores will be in the second as opposed to the third quartile decreases. Interestingly, the exact opposite is true for daughters whose scores fall within the fourth test quartile as opposed to the third test quartile. The relative risk ratio of mothers who did not complete high school vs. completed high school is 0.60 for daughters whose test scores were in the fourth quartile as opposed to the third quartile. In other words mothers who did not complete high school were the least likely to have daughters with the highest test quartile scores. The odds ratio of having a daughters whose test scores are in the highest quartile increases significantly for mothers who graduated college (1.84), masters degree (2.24) and PhD, MD, or equivalent (2.67).

This indicates that mothers with increasing levels of education are more likely to have daughters whose test scores fall into the highest category.

DISCUSSION

This study focuses on the means through which mothers influence their daughters' educational and occupational aspirations. Attention was paid to the mothers reported education level and occupation, the daughters' perceptions of their mothers' desire for them, daughters' test scores, and race/ethnicity. The major focus of the research was to use statistical models to determine the primary means by through which mothers influence their daughters. Models were constructed to determine whether the role model hypothesis or the grades hypothesis explained the relationship better. Overall, the data indicate that the influence of the mother in the determination of a daughter's educational and occupational aspirations is best explained by the grades hypothesis.

I found little evidence to support the role model hypothesis. There was little indication that daughters' aspirations were directly modeled on observations of their mother. Except for in a few instances, a mother's education level and occupation did not directly explain her daughter's aspirations. This is contrary to the findings of the previous literature that focused on socialization based primarily upon gender roles. If this were the case, we would expect the daughters to aspire to the same professions as their mothers as this would indicate what roles they had learned, through observation, were appropriate for women (Kenkel & Gage, 1983). The daughters in my study seem to be more resistant to the pressures of traditional gender role stereotypes than the daughters of previous generations (Eccles, 1987). Few daughters, for instance, wanted clerical jobs, although a lot of mothers had them. The daughters tended to aspire higher than the levels reached by many of the mothers.

This may be explained by a variety of things. For one, the nature of the economy has changed and many occupations require higher levels of education than in the past. In addition, the nature of jobs has changed in the postindustrial economy. Hanna Rosin, (2010), in *The End of Men*, writes, “The attributes that are most valuable today – social intelligence, open communication, the ability to sit still and focus – are, at a minimum, not predominantly male. In fact, the opposite may be true”. This suggests that the economy is becoming increasingly open to women. The fact that “women are the majority of college and university students and receive well over half of bachelor’s and master’s degrees as well as half of doctoral degrees awarded in the United States” is also telling. Women then, are not only earning more degrees than men, but find increasing options when they do. In the past, many mothers who left had to leave their jobs to raise their kids were unable to re-enter the workforce at a high level after so much time away. In recent years daycare has become increasingly acceptable, allowing a mother the freedom to return to work soon after childbirth if she chooses.

A different explanation as to why daughters aspire to higher levels than their mothers might be that, in actuality, the daughters’ aspirations do not match realities. Daughters may aspire to the status and lifestyle standards greater their mothers, but may still end up at a similar level in the end. Erickson, Goldthorpe and Portocarero (1979) explain, “There is a general propensity for intergenerational class *immobility* through the operation of what might be called class-specific inheritance effects” (p.36). They note that these effects are especially influential in the lowest classes. “In addition, there is a general propensity for mobility to be reduced by ‘hierarchy’ effects deriving from the overall advantages and disadvantages associated with different class position” (Erickson,

Goldthorpe & Portocarero, 1979, p. 36). Due to the cross-sectional nature of the dataset, we cannot be sure how accurate aspirations are. While daughters' may have high aspirations, we cannot be sure if they actually end up in an upwardly mobile class.

A different explanation might suggest that the influence of gender roles has diminished over time, in line with Kalmijn's (1994) findings. As society has changed, the relationship between sex and occupation is no longer as well defined. "Eagly and Diekman (2003) argued that gender roles are malleable to some extent such that expectation for sex differences in social behavior are diminished when the actual behavior of men and women becomes more similar" (as cited in Powell & Greenhaus, 2010, p.158). As dual-earning families rise, the behaviors of men and women converge, possibly redefining the nature of sex roles.

In my findings, the models did indicate the significance that mothers' education level and occupation had on daughters' test quartile scores. In general, the higher the level of education achieved and the more prestigious the occupation of the mother, the higher the test quartile score of the daughter was. This is consistent with the ideas of Bourdieu (1985) who suggests that the parents can influence their children through the transmission of social capital (Portes, 1998). My findings indicate that this social capital is important in predicting daughters' aspirations. Evidence of this is found even in the case of mothers who are schoolteachers, who are the exception to the rule that higher levels of education and more prestigious occupations predict higher test quartiles. Mothers who were schoolteachers had high achieving daughters. Schoolteachers do not have post-graduate education, in most cases, and teaching is not viewed as a particularly prestigious job. But, schoolteacher moms do have a great deal of social capital that they

give to their daughters. This indicates that it is not necessarily the mothers' socioeconomic or class position that matters most, although it is certainly important. Instead it seems that what matters most is what the mother knows and values.

This realization prompted the running of additional models that specifically tested the relationship between both mothers' occupation and education and daughters test quartile. The data confirm that the significance of the results, that the characteristics of the mother influence the daughter's test score. Further models confirmed that daughters test quartile scores, in turn, were the most important factor in predicting their future aspirations. This is consistent with the previous literature such as Parcel & Menaghan (1994) and Becker (1981) who indicate that the amount of resources available to an individual directly relate to their future success. Haveman, Wolfe & Spaulding (1991) agreed, indicating that the greater the resources of the parents, the more time and energy they can put into the children which in turn raises the odds of the children's success. My results indicate the existence of a chain of influence through which mothers shape their daughters.

In summary, in this study I found that mothers' education and occupation influenced their daughters' corresponding aspirations indirectly, supporting the grades hypothesis. Simply put, I found that a mother with higher educational attainment and a more prestigious occupation was more likely to have a daughter with higher test scores, with higher test scores leading to higher expectations and aspirations by the daughter. My findings are in line with the literature that distinguishes the effects of parents' education levels on the results of their children (Simon & Baker, 1987, Anger & Heineck, 2010).

There are a variety of limitations that should be discussed in relation to my study. One limitation is in regards to the reliability of the data. The Education Longitudinal Study (ELS), 2002 is a survey primarily composed of self-reported data, in some cases self-report by proxy. Allowing for self-report means that the researcher assumes that the respondent is giving accurate answers about past actions or behaviors (in the case of the mothers) or plans for future behaviors (in the case of the daughters' aspirations). My analysis is based upon the responses given, assuming that they were valid.

Another limitation arises out of the use of secondary data. I am relying on a survey that was conducted using another researcher's questions, variables, and methods of categorization. I cannot gain much clarity on the survey beyond what is written in the codebook and cannot ask any follow up questions of the subjects to gain more insight. Additionally, although the survey is longitudinal, my study is cross-sectional. I base my analysis only on the reported aspirations of the daughters in the tenth grade; I do not know what true education level or occupation they will achieve.

Future research could expand the study to answer some of the questions that the analysis raises. While the study establishes that the mother is an important factor in influencing her daughter's educational and occupational outcomes, through her influence on grades, it does not explain what specific behaviors have an effect on improving grades. It also does not explain to what degree genetics is in effect. Future studies could use twins or siblings to determine if genetics explains the relationship.

Now that it is understood that grades are the important factor in regards to predicting future aspirations, it would be interesting to look at the influence of specific childrearing behaviors on grades. This would test if there were specific parenting

components that are influenced by having a higher education or more prestigious occupation. Is the primary component the educational level of the mother that Stevenson and Baker (1987) say, “indicates the mother’s experience and knowledge of how one can progress through the educational system, and therefore [that] involvement of a more educated mother in the school career of the child may be more effective” (p. 1349). Or is it instead the mother’s behaviors in the home that are more important; behaviors such as reading and speaking with the child to increase vocabulary development, helping the child with a science experiment or art project, or simply providing assistance with homework?

It would also be interesting to replicate the study at various ages in the daughters’ lives to determine if the mothers’ influences on aspirations are age specific. Because the study is longitudinal, in future years it will be possible to see if the daughters’ aspirations actually become reality, which could provide unique insight.

Also in future research it would be interesting to examine the effects of the father under the same conditions. Would their influence also be explained by the grades hypothesis although it is a cross-gendered relationship? Recent research by Dahl, Dezsó and Ross (2011) has addressed the topic of fathers’ influence on daughters’ aspirations by examining the question of influence in reverse – using research involving male CEOs and their daughters. They argue that if parents care about the life experiences of their children, they are more likely to adopt practices and attitudes that benefit their children. They point to Warner (1991) and Warner and Steel (1999) who “found that having daughters makes parents more likely to adopt feminist views and more supportive of policies designed to address gender equity” (Dahl, Dezsó, & Ross, 2011, p. 3). Future

research then could examine if the causal relationship involves children influencing the attitudes of parents, which influences actions, which in turn, influences children's outcomes. Mothers' influence on sons could also be used as an area of future research.

There are a variety of potential implications of my findings. One such implication is practical in nature. The finding that the grades hypothesis works better than the role model hypothesis in explaining daughters' aspiration is important. Understanding this provides suggestions for possible actions parents or schools could take. Parents should take an active role in encouraging the intellectual development of their children through the transmission of social capital. As has been discussed, social capital is dependent on a variety of factors. Parents should take note of this and attempt to provide academic help to their children, providing opportunities for cultural activities, or have career-focused discussion to encourage daughters to higher levels of achievement. This fits with "...research based on the National Education Longitudinal Study, a sample of nearly 25,000 eighth-graders, among four areas of parental involvement (home discussion, home supervision, school communication and school participation), home discussion was the most strongly related to academic achievement" (Gibbs, 2005). As social capital is often tied to socioeconomic status, however, teachers and schools should attempt to step in to fill this role for children whose parents' levels of social capital are not as high. This can be accomplished by providing additional help and scholarships for extracurricular activities.

A second implication of this finding might relate to policy. Evidence that grades predict future aspiration indicate the importance of early success in schools. It is not enough to rely on parents to provide information and encouragement about educational

and occupational goals. Schools that received more funding might be able to implement a career planning curriculum, beginning at a young age, to ensure the greatest success of their students. More funding would additionally enable schools to hire more college and career counselors, which would in turn allow more individual attention to be paid to female students. “Research clearly shows that counselors, when consistently and frequently available and allowed to provide direct services to students and parents, can be a highly effective group of professionals who positively impact students' aspirations, achievements, and financial aid knowledge” (McDonough, 2005, p. 2).

Additionally, in terms of policy, my research suggests that a change in the working environments of women would be helpful as well. A more gender equitable workplace opens the possibilities for women. We assume that a more gender equitable workplace encourages participation, which raises aspiration, which in turn raises the social capital of women, which can eventually be transmitted to their daughters. To help facilitate this change I would suggest that more steps are taken to ensure female friendly practices in the workplace. This is in line with Ray, Gornick and Schmitt (2009) who identify five policy practices that identify countries with higher gender equality. These practices include: (1) generous paid leave; (2) non-transferable quotas of leave for each parent; (3) universal coverage combined with modest eligibility restrictions; (4) financing structures that pool risk among many employers; and (5) scheduling flexibility” (Ray, Gornick & Schmitt, 2009, p. 3). Although human resources policies are in existence and in practice in many companies that seek to equalize genders, more should be done. One

potential suggestion would be to adopt some of the progressive practices and mandate that companies follow them.

A final implication might be theoretical in nature. My results indicate that role modeling is not as influential as some of the previous literature suggests. The results imply that gender theory may be losing validity in terms of explaining influence on daughters' aspirations. Young girls may be receiving cultural messages that women are encouraged to aspire to high prestige careers: "The combined message may be strong enough to have produced adolescent girls who aspire to higher prestige girls than did in previous generations" (Watson, Quatman & Edler, 2002, p. 331). Furthermore, the decline in the importance of exactly what the mother does suggests that gender socialization is no longer as large a force as once thought. Instead the results indicate that the mothers' actions and social capital are most important. Specifically, the quantity and quality of the resources is important. This suggests that more educated mothers have larger amounts of resources to transmit to daughters. They are more prepared both economically and socially to support their daughters and encourage their aspirations. We hope that this encourages young females to achieve higher levels of education so that when they are mothers they can provide greater resources for their daughters as well.

In conclusion my results are similar to the findings of Stevenson and Baker (1987) who suggest an indirect relationship between mothers' education and their beliefs and practices, to children's self concepts and values, which in turn affect children's engagement in intellectual tasks and academic achievement (p. 198). Role modeling alone does not encourage aspiration to higher levels of education or more prestigious occupations. Instead, what women learn in school affects their beliefs and values, which

increase the likelihood that they will be supportive in the encouragement of their daughters. They better understand how to navigate the education system and how to encourage intellectual stimulation at home. My results indicate that it is not the specific characteristic of the mother that influence the daughters' opinion, but her actions. This is noteworthy because it indicates that even as women achieve higher levels of education and enter professions that were previously restricted by gender, we cannot assume that other women will follow their example. Instead women must be actively encouraged, exposed to a wider variety of experiences, and have the opportunity to discuss future career options with knowledgeable persons. This is critically important for females as they still lag behind males in terms of pay. Understanding that the achievement gap in terms of education and occupation between genders has still not been closed indicates that there is more to be done. The proven transmission of influence between mother and daughter indicates that mothers may be one of the more effective agents of change. Women must continue to provide large levels of support to their daughters in the hopes of raising their aspirations and ensuring more promising future outcomes.

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