Middle school girls and the "leaky pipeline" to leadership

An examination of how socialized gendered roles influences the college and career aspirations of girls is shared as well as the role of middle level professionals in disrupting the influence of social gendered messages and stigmas.

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The lack of women in top leadership ranks has been well documented and long examined. In 2014, across the Fortune 500 companies, women comprised only 4.6% of Fortune 500 CEOs, held only 16.9% of Board seats, and made up 14.6% of top executive positions (Catalyst, 2014). In government, women made up only 15% of Congress and 12% of governorships. Even in nonprofits, women held only 19% of the CEO positions in the 400 largest charities (Joslyn, 2009).

These numbers are especially surprising when we recall that women have a good running start: in high school, girls academically outperform boys. Girls constitute 55% of students in the top 10% of high school graduating classes, and earn an overall average GPA of 3.42, compared to 3.28 for boys (College Board, 2012). Likewise, in college, women outpace men in enrollment by a ratio of 1.4 to 1 (DiPrete & Buchman, 2013) and earn 55% of college degrees (Wang & Parker, 2011). Today, according to the Council of Graduate Schools, women also outnumber men in most graduate and doctoral programs (Jaschik, 2010). Once in the working world, women's participation seems fairly consistent with the numbers just cited: they comprise 46.9% of the U.S. labor force and 51.5% of middle management (Catalyst, 2014). But while organizations have made efforts to attract, retain, and advance female talent (Galinsky & Backon, 2009), a shift occurs along the path to top positions, resulting in fewer women leaders.

Why do girls perform so well academically yet lose ground as professional women? This diminishing number of women up the leadership hierarchy is often referred to as the "leaky pipeline," and attributed to many factors: external ones such as work environments not conducive to work/life balance, and internal ones such as women's own leadership aspirations (Eagly & Carli, 2007). How early does that "leak" begin? Though much research has focused on college-age and adult women, little quantitative analysis has been done with younger girls. The purpose of our research is to study middle school girls to determine whether limiting factors in relation to career opportunities, expectations, and self-beliefs might emerge as early as 10 to 12 years of age. We also sought to understand how middle school curricula, programs, and educators might be empowered with specific knowledge to counteract or mitigate these factors.

To that end, this research examines what middle schoolers think about careers and what factors may influence their nascent aspirations. We also wanted to know what impact, if any, single-sex environments, here proxied by membership in one organization, the Girl Scouts, might have on young girls' career goals. We found that socialized gendered roles, already evident by middle

school, do influence the career aspirations of young adolescents; and that single-sex environments increase the self-confidence of girls, broaden their career options, and mitigate some of the power of gendered messages.[1]

In this article we first provide an overview of what is known about career development in general and middle schoolers specifically. Then, using online survey responses of more than 1200 middle school boys and girls, we discuss their attitudes toward work, their career goals, and differences in self-efficacy and career aspirations among boys, girls, and Girl Scouts. These findings may quantify and substantiate what many middle school educators see every day in their classrooms. Finally, we offer recommendations for what middle school teachers and counselors can do, or are already doing, to interrupt the impact of social gendered messages and retain young girls in the pipeline to become tomorrow's leaders.

Theories about career development

Two theories provide insight into middle schoolers' career choice development: social role theory and social cognitive career theory (SCCT). Every culture includes gendered expectations for what individuals, based on their sex, are *supposed* to be like (their traits, such as being relationally-oriented or autonomous) and *supposed* to act like (their behaviors, such as being competitive or collaborative). These expectations help define social roles, that is, expectations for "appropriate" gender role behavior, including expectations about careers and family roles. Social role theory (e.g., Diekman & Goodfriend, 2006) explains the pressure that a man or a woman faces to act consistently with those social roles (male doctor, female nurse) and the resulting conflict, discomfort, and confusion when individuals do not conform (female doctor, male nurse). At the same time, however, social role theory acknowledges that these roles are malleable, suggesting that as more women move into nontraditional fields, roles and expectations may also change as a result.

Social cognitive career theory (Lent, Brown & Hackett, 1994) explains career development using personal and environmental factors, as taken in and interpreted by the individual. For example, a middle schooler's career goals start with "personal inputs" such as sex or ethnicity and her "background," which includes factors like parental advice and media messages. She

then has "learning experiences" during activities such as clubs, sports, and early jobs; those experiences generate both her level of self-efficacy, that is, the extent to which she believes she can accomplish a goal, and her positive or negative expectations for future outcomes. Together, those feelings of self-efficacy and expectations fuel her career interests, which, if supported, lead to career goals and, ideally, to action that moves her towards achieving her goals (see Figure 1). As choices emerge across time, encouraging influences like coaching and mentoring lead to behavior that aligns with career goals, while barriers like discriminatory actions or limited job opportunities lead to non-aligning behavior.

Given this theoretical background, how do social roles intersect with career goal development? Research findings, initially focused on adults, found a significant gendered impact: social gender roles influence what women and men are expected to do, the talents they cultivate, and the occupational paths they pursue. In addition, those gender roles open up different opportunities and constraints as adults move from goals to action (Prentice & Carranza, 2002; Wood & Eagly, 2002). When researchers looked at children, they found that children establish gender role stereotypes as early as age two and an emerging career identity by middle school (Jantzer, Stalides, & Rottinghaus, 2009).

What forces shape those early career aspirations? Watson and McMahon (2005) cite multiple studies on children across the globe from kindergarten through elementary school, which have found that gender has already impacted children's thinking about their future career options. Further, Marlino and Wilson (2003), looking at girls in grades 7 through 12, identified media, family, and the school environment's courses, programs, and educators as strong influencers of girls' attitudes towards careers and future expectations. More than ten years later, these factors, expanded on below, continue to play a major role in gender development.

Media: Children watch movies where only 19% of characters "on the job" are women; they watch television where 27% of the women, compared to 1% of the men,

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1 We recognize that there are many different types of single-sex environments, including academic and extra-curricular settings. Though we hypothesize that we would find similar results with other girl-serving organizations, obviously we cannot make any definitive claim to that effect. Future research will examine whether other girl-serving organizations (beyond the Girl Scouts) and whether multiple membership in girl-serving organizations leads to comparable outcomes.

Figure 1 Social cognitive career theory
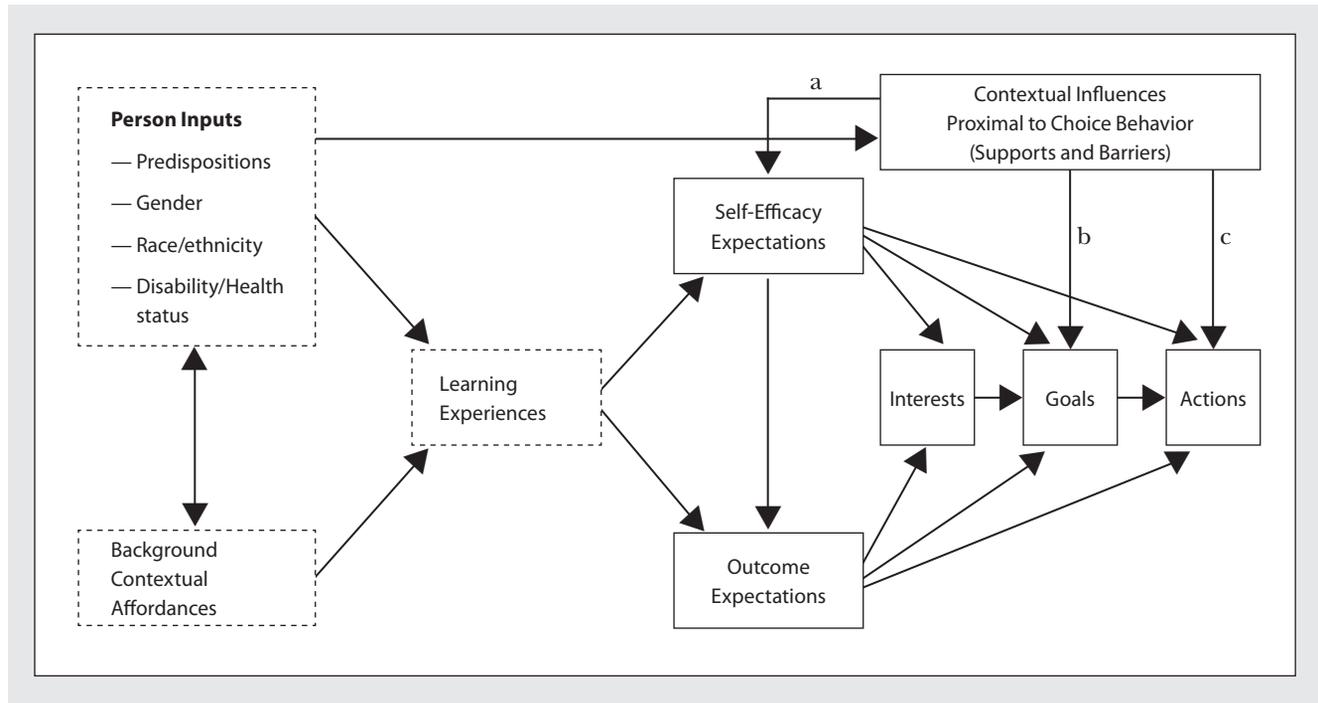
do housework; and they read books where men are depicted in twice as many careers as women (Hartung, Porfeli & Vondracek, 2005; Watson & McMahon, 2005; Herr, 2007). In G-rated films, men are far more frequently portrayed working—of the 333 speaking characters shown in a job, only 19.5% are female characters. In addition, the *types* of professions shown are heavily gendered; for example, almost all the business owners and military personnel are male, and positions in the medical sciences, executive positions, and law include no females (Smith, Choueiti, & Stern, 2013).

Books: Gibson (1988) makes the somewhat obvious point that, "books are . . . an important way for a culture to transmit its varied social values to its children" (p. 177). As we saw in media messages, male characters dominate in children's literature. McCabe (2011), who studied nearly 6000 children's books published between 1900 and 2000, including winners of the prestigious Caldecott Award, found that males are central characters in 57% of those books and that only 31% feature a central female character. Narahara (1998) studied Caldecott and Newberry award-winning children's picture books and found that male protagonists outnumbered females by a ratio of three to one, and 21 out of 25 books contained images of women wearing aprons.

Parents: Parents may be the most important influence on children's beliefs and attitudes toward gender and careers. Witt (1997) points out that children's earliest exposure to gender roles—"what it means to be male or female"—comes from their parents. She cites research findings that suggest that parents continue to prefer male children and that they treat sons and daughters differently. Whether covert or overt, intentional or unintentional, it appears that parents communicate to children gendered messages about activities, occupations, and beliefs and values. For example, Raley and Bianchi's (2006) research reveals that daughters still do more housework than sons, and an intergenerational study (2001) suggests that mothers play a significant role in influencing children's attitudes toward work and family roles, including their beliefs about how housework should be allocated. The work of Jodl, Michael, Malanchuk, Eccles, and Sameroff (2001) makes clear that parents across all races and ethnicities influence—through both "direct and indirect pathways"—children's academic values, interest in extracurricular activities like sports, and career aspirations.

Educators: By the time a student reaches middle school, she is likely to have spent approximately 7200 hours in an educational institution. Not surprisingly,

then, schools powerfully shape attitudes toward careers. In school, mastery of particular course material like mathematics or science can lead to or away from the self-confidence to pursue certain careers in, for example, STEM. Peer pressure and social dynamics tend to reward both boys and girls to maintain conventional gendered roles (Valian, 1998). Individual teachers provide learning experiences that can foster positive or negative outcome expectations and interests; as with parents, messages from teachers may be explicit or implicit. School counselors can encourage students to remain on an academic path that keeps broader career options open. Schools and educational partners can offer curricula or programs providing positive and encouraging learning experiences tuned to the needs of the next generation of career professionals.

This study uses the framework of SCCT and incorporates findings on social gender roles to explore what might predict career aspirations among middle school girls and boys. Do boys and girls (personal input) have different career interests, aspirations, and goals, and do these differences reflect gendered social roles? What messages (background input) have they heard about careers as they interact with the gendered landscape around them? Has girls' participation in Girl Scouting had any impact on their self-confidence and their career aspirations?

Research method

With the aforementioned questions in mind, we surveyed 1200 middle school boys and girls using the online platform Zoomerang drawing from two groups: Girl Scout members in grades 6–8, and a Zoomerang database of pre-selected adolescents in the same grades from New England, New York, and Pennsylvania. For all respondents, because they were legal minors, parental consent and respondent assent were obtained. The final sample contained 414 boys and 775 girls; of the girls, 475 self-identified as Girl Scouts, and 299 were non-Girl Scouts. These two samples of girls—Girl Scout girls (GSG) and girls who are not Girl Scouts (NGSG)—allowed us to test the impact on career aspirations of participation in a single-sex organization dedicated to serving girls with a focus on leadership development.

Participants in the final sample were in grades six (54%), seven (25%), or eight (21%). The average age of participants was 12.2 years, and they ranged between 10 and 15; they represented urban, suburban, and rural zip codes. The socioeconomic levels of the young adolescents were consistent across all three groups. With regard to ethnicity, the majority reported themselves as Caucasian (82%); the remaining respondents identified as African American (5%), Asian (4%), Native American (1%), and Multiracial (2%), or Other (2%). Additionally, 13.5% of the respondents lived in a single parent household. Each sub-group (boys, GSG, and NGSG) showed similar distributions in age, grade level, ethnicity, household adults, and urban/rural/suburban distribution. Because of this similarity in demographics across the three groups, our analysis was able to isolate membership in Girl Scouts as a factor in explaining differential outcomes.

Findings

What, if any, gendered beliefs do middle schoolers hold?

To determine what gendered attitudes middle schoolers hold, we asked several questions about what they have learned about work either by direct advice or by observation; whether they agree or not with statements about career opportunities for men and women; and what their own future plans are. The results make clear that middle schoolers recognize the challenges of parenting and having a job (see Figure 2), with more girls than boys recognizing this difficulty. Even though 13.2% of our sample came from single-parent households and approximately 25% of mothers did not have outside employment, this finding cuts across all middle schoolers. Further, both boys and girls see gendered differences in their respective futures, with boys more likely than girls to believe that there are some jobs that boys are better at and that boys have more career opportunities. When asked to speculate about their future plans, eight times as many girls than boys anticipated stopping work temporarily to stay home with young children.

Do middle schoolers understand the gendered differences they each face?

To assess how broadly and firmly established messages are regarding which careers are available to men and which to women, we asked a two-pronged question. First, we asked in what careers the boys and girls were most interested. Using a list of occupations from the *Teen Girls* study (Marlino & Wilson, 2003) and modifying them for

Figure 2 Significant differences in gendered messages across boys and NGS girls and GS girls (percentages of group agreeing with each statement)

		Boys	NGS girls	GS girls
What they learned about work from direct advice or from watching working adults?	Even when both parents work, moms take care of the kids.	23.4	27.1	15.3
	It is really hard to have a job and have kids to take care of.	32.1	39.6	
Messages they agree with	There are some jobs that boys are better at than girls	73.0	55.4	
	Boys have more career opportunities than girls	35.1	32.7	23.6
Speculation on their future plans	If I have children, I will stop work until my children begin school, but then go back to work	4.0	29.0	32.0

our younger audience,[2] we offered 20 occupations from which respondents could select. Once they had made that choice, they were asked to, "imagine that you are the opposite sex (if you are a girl, imagine you are a boy); consider which one career you would be most interested in as the other sex." We then compared the top five choices (see Figure 3).

When girls speculate about their top choices as boys, girls accurately anticipate the top three choices the boys made for themselves. In order of preference, girls-as-boys select professional athlete (boys' #2 choice), jobs in STEM (boys' #1 choice), and jobs in business (boys' #3 choice). Girls do not anticipate boys' #4 choice of jobs in the professions and boys' #5 choice of jobs in arts, which are the two career areas that girls show the most interest

in (girls' own #1 and #2 choices). When boys speculate about their top choices as if they were girls, they are even more accurate: their top five choices match, in exact sequence, the top choices girls made. In order, boys-as-girls select jobs in arts (girls' top choice), in professions (girls' second choice), jobs in medicine (girls' third choice), jobs in STEM (girls' fourth choice) and business (girls' fifth choice).

Do boys and girls have different, and gendered, career aspirations?

To explore the potential gendered nature in middle schoolers' actual career survey selections, respondents' choices were analyzed through two lenses: choices in

2 For example, "manufacturing" as a career title was modified to "a business that makes or builds products."

Figure 3 Top 5 career choices of boys for boys; of boys "if" they were girls; of girls for girls; of girls "if" they were boys

Top 5 career choices selected by boys:		Top 5 career choices selected by girls:	
Boy for himself:	Boy as a girl:	Girl for herself:	Girl as a boy:
1. Job in STEM (scientist, engineer, math)	1. Job in arts (performer, artist, writer, designer)	1. Jobs in the arts (performer, artist, writer, designer)	1. Athlete
2. Athlete	2. Job in professions (lawyer, professor)	2. Job in professions (lawyer, professor)	2. Job in STEM
3. Business	3. Job in medicine (MD, health care)	3. Job in medicine	3. Job in arts (performer, artist, writer, designer)
4. Job in professions (lawyer, professor)	4. Job in STEM	4. Jobs in STEM	4. Job in medicine (MD, health care)
5. Job in the arts (performer, writer, journalist)	5. Business	5. Business	5. Business

female- versus male-dominated jobs;[3] and choices for STEM (science, technology, engineering and math) careers. When asked to select their top career choice, the majority of boys (91%) selected a male-dominated job, and only 8.5% of boys selected a female-dominated one. Conversely, 74% of girls chose a male-dominated job, and 25% chose a female-dominated one. Overall, 80% of the middle schoolers preferred a job that was not female-dominated.

Examining career choices through a STEM lens indicates an additional gendered preference: 26.1% of the boys chose STEM careers, whereas only 12.4% of girls chose a future career in STEM. This result is eerily resonant with current data on women in STEM. Although women in the U.S. fill 48% of all the jobs in the U.S. economy, they hold fewer than 25% of jobs in STEM; they tend not to go into STEM fields even if they have majored in a STEM discipline in college; and they have higher drop-out rates once they are in STEM occupations (Beede et al., 2011).

Do girl-serving organizations (here, Girl Scouts) contribute to self-confidence and career aspirations in girl members?

To explore the possible impact a girl-serving organization may have on girls' confidence and career aspirations, we compared responses across GSG and NGSG regarding confidence, their agreement with gendered messages, and their career choices. We identified confidence as a key factor because, as SCCT theory makes clear, self-efficacy[4] affects individual career interests and career choices. To determine the level of self-confidence of middle school boys, NGSG and GSG, we asked our sample, "Compared to other kids in your grade, how would you rate yourself in the following areas?" Those 21 areas, derived from the *Teen Girls* study (Marlino & Wilson, 2003), include competencies such as speaking in front of a group, solving problems, organizing projects and activities, and getting good grades. Respondents rated themselves on a 5-point Likert scale, from 1 (much worse) to 3 (about the same) to 5 (much better). We then used factor analyses to determine whether any broad underlying factors might explain differences in confidence across those groups. Factor analyses allowed us to ask whether each of the 21 activity-ratings explains differences in self-confidence or whether clusters (factors) of those activity-ratings might function together to do so.

Our factor analyses identified three clusters that explain different aspects of confidence. Clustering these aspects into three larger categories enables one to synthesize the key characteristics related to confidence. Factor analysis identified those three categories, which we named confidence in "being a leader in charge"; confidence in "being a responsible leader" (producing outcomes); and confidence in "building teams". When taken together, these three factors explain overall confidence (see Figure 4).

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3 We defined career choices as "female dominated" if, according to the Bureau of Labor Statistics, the career was comprised of 65% or more women workers. These careers include, for example, librarian, elementary school teacher, child care worker, and human resource manager.

4 Referred to as 'confidence' in this study.

Figure 4 Activities that comprise each factor contributing to overall confidence

Confidence as Leader in Charge	Confidence as Responsible leader	Confidence as Team building Leader
• Speaking in front of others	• Getting good grades	• Being flexible and adaptable
• Performing in front of others	• Understanding and working with numbers	• Being sensitive to cultural differences
• Speaking about something you care about	• Finishing projects on time	• Being a good listener
• Being a leader	• Writing reports and papers	• Working with others or in a team
• Being in charge of projects	• Solving problems	• Resolving conflicts
• Getting people to agree with you	• Organizing projects and activities	
• Being creative	• Saving money	
• Making decisions		

Figure 5 Confidence mean scores across Boys, NGSG, and GSG
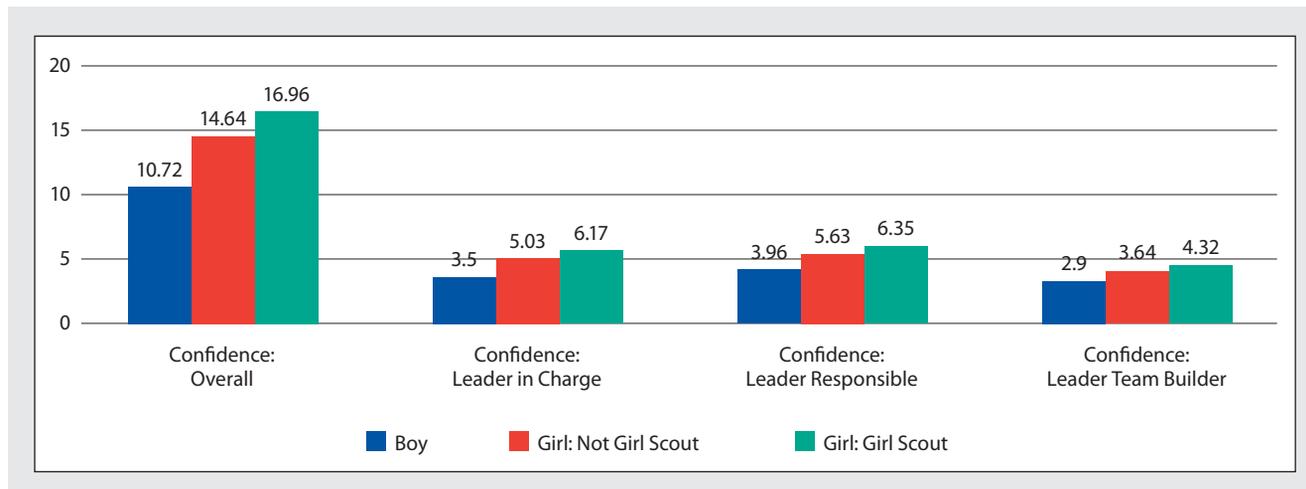
Across all three confidence factors, boys score lowest, NGSG score in the middle, and GSG score highest. Figure 5 shows the mean scores for "Overall Confidence" and each of the factors across the three groups. Boys' raw mean score for "Overall Confidence" is 10.72 compared to NGSG's of 14.64 and GSG's of 16.96. GSG are fully a third higher in "overall confidence" scores than boys.

In comparing responses to questions about what middle schoolers have learned or believe about differences across men and women's careers, Figure 2 discloses two statistically significant differences across boys, NGSG, and GSG. GSG are less likely than boys or NGSG to believe that "boys have more career opportunities than girls". They also show less agreement with the statement that "even when both parents work, moms take care of the kids and the house." Conversely, GSG anticipate stopping work temporarily (versus permanently) to stay home with young children in higher

numbers than both boys and NGSG. Interestingly, GSG also hold different career beliefs beyond the gendered ones. GSG, more so than boys and NGSG, more strongly believe that "you can do anything if you work hard at it" and that "work can be fun!" (see Figure 6). GSG also believe more strongly than NGSG that "you should try to work at something you love or are really excited about."

Based on these research findings, it would also appear that participation in Girl Scouting broadens girls' career aspirations to more fully embrace STEM careers. Almost a third more GSG (13.5%) would choose a career in STEM than would NGSG (10.7%). The Girl Scouts in our sample also report a greater interest in male-dominated careers, including business, public service, and government. And, finally, their higher confidence also contributes to their greater interest in medical, professional, and arts fields that require advanced degrees.

Figure 6 Additional significant differences across boys and NGSG and GSG (percentage in agreement with the statement)

		Boys	NGS girls	GS girls
What they learned about work from direct advice or from watching working adults?	Work can be fun!	47.8	50.5	64.7
	You can do anything if you work hard at it.	59.9	61.5	72.7
	You should try to work at something you love or are really excited about		61.9	75.0

Discussion and implications for middle school professionals

These findings demonstrate that middle schoolers are indeed already thinking about future careers, that gendered messages influence their thinking and planning, and that girl-serving organizations, or girl-only "learning experiences," can positively mitigate those messages and broaden girls' career choices.

Before discussing what middle school professionals may do to influence the career choices of their students, it is important to put those choices in a broader context in order to understand why we should be concerned. Today, close to 40% of mothers are either the sole breadwinner or earn as much or more than their working spouse or partner (Boushey & O'Leary, 2009). In 2008, employed women in dual-earner couples contributed an average of 44% of the annual family income, up from 39% just 10 years earlier (Galinsky, Aumann, & Bond, 2011). No one expects this trend to reverse itself, particularly given women's increased education levels and participation in the labor force, families' increased dependence on two incomes (Galinsky et.al, 2011); and the impact of the Great Recession and America's shift away from blue collar labor to a service and knowledge-based industry (Shapiro, et al., 2012). Clearly, all middle schoolers, boys and girls, face a future of increasingly worrisome financial insecurity. Interestingly, one area of agreement across all our respondents was their recognition of this future: 62% of boys and 58% of girls anticipate they will have to support themselves financially in the future.

At the same time, middle school girls express more interest in jobs in female-dominated industries. Dubbed "pink collar" jobs, average salaries are lower in industries dominated by women. Boys' almost exclusive career choices in male-dominated jobs may reflect two gendered dynamics: male-dominated jobs usually confer higher pay and status than those dominated by women (Hartung, et al., 2005; Wilbourne & Kee, 2010) and the greater reluctance of boys to even consider female-dominated jobs reflects society's lower tolerance for men and boys who take on "feminine" careers than for women and girls taking on "masculine" ones (Francis, 2002; Wilbourne & Kee, 2010).

Girls' lower interest in STEM careers also affects their future earning potential. STEM jobs are more immune to economic downturns than other careers, and are expected to grow by 17% by 2018 compared to 9.8% for non-STEM jobs (Beede et al., 2011). It also appears that the wage gap between men and women in STEM careers is less than in other fields (Sharma, 2011). Additionally, STEM careers are seen as higher status with higher pay than other fields, which also keeps STEM professionals in secure and high paying jobs (Rothwell, 2013).

Thus, it is clear that girls and their future families will benefit from an appreciation of a broader range of career options and opportunities. Given this reality and the continued "leaky pipeline," what can middle school professionals do to keep girls in the pipeline towards leadership and in careers that will meet their future financial needs? What can teachers and counselors do to counter the gendered messages that narrow middle school girls' career choices?

Fortunately, middle school professionals have a strong platform from which to act. The middle schoolers in our sample overwhelmingly turned to their teachers and guidance counselors for career advice. Almost 40% of girls and 33% of boys indicated school as their primary source of information about careers, followed by family members (averaging 23%), then internet, television, and magazines. Given the significant impact middle school professionals can have, we propose a three-pronged strategy: add specificity to messaging from parents; increase STEM participation; and link relational thinking to interest in careers.

Our earlier discussion makes clear the importance of both implicit and explicit parental messages (Jodl, et al., 2001). Middle schoolers report that the most frequently perceived career advice from their parents or guardians as "Do whatever makes you happy." Over 75% of GSG, 61% of NGSG, and 59% of boys either received this advice directly or came to this conclusion by observing adults. While it may be encouraging that families value their children's future happiness and no longer seem to be insisting on a specific career path for their children, educators need to supplement this "happy" advice with specificity regarding the reality of the work world, career options, and appropriate pathways from "interest" to "action" (Lent, et al., 1994) to fulfill career aspirations. Many middle schools already do so by providing interactive learning experiences such as career fairs, guest professionals speaking in classrooms, field trips to workplaces, job shadowing, and other ways of exposing their students to a broad career spectrum. Without that information, many young adolescents not only may not know the range of careers open to them but they may not understand the practical steps needed for certain

careers. As a result, many careers that require years of preparation and education may be closed off to them (Kekelis, Wepsic & Heber, 2005).

This work is even more critical when viewed through another survey finding: parental advice may reflect their own gendered expectations. Specifically, middle school girls and boys perceive different levels of support from family members regarding their career aspirations. For example, as noted above, girls are less interested in STEM careers; 10% of all girls would choose a job in STEM, compared with 32% of boys. But perhaps even more interestingly, girls also perceive less support for their interest in STEM careers; 11% of girls versus 23% of boys responded that their parents would support that choice. Both girls and boys are marginally interested in business careers (2.8% and 3.9% respectively), yet again parents are perceived to be less supportive of their daughter's business aspirations (2.3%) versus their sons' (6%). It is difficult to find any explanation other than gendered messaging for this disparity.

In addition to supplementing parental advice, educators can develop knowledge to increase STEM participation. Given the importance STEM careers will have in our future economy, science and mathematics are clearly crucial areas of intervention. Because girls' interest in science is more often sparked by in-school experiences, a greater exposure to "hands on" science needs to occur prior to and during middle school (Maltese & Tai, 2010). Second, seeing female role models is not enough. Women scientists and engineers also need to talk about the gendered barriers they had to overcome. Some teachers may worry that a focus on the challenges may be overly discouraging to students; but research findings suggest that the opposite is the case. In fact, without that discussion, women's success in nontraditional fields may be discounted by girls as "luck." For middle schoolers' "outcome expectations" (Lent, et al., 1994) to be altered, young girls need to attribute those female role models' successes to perseverance and hard, but do-able, work (Weisgram & Bigler, 2007; Frome, Alfeld, Eccles, & Barber, 2006).

Finally, middle school teachers and other educational professionals can help to shape girls' career expectations by focusing on the relational values that girls hold. Business, STEM, and other nontraditional careers may become more appealing to girls once they develop an understanding of how such fields help them to achieve their top goals, which in our sample were, "making the world a better place," and, "helping others." The connection between helping others and STEM careers may be less obvious to girls; the *Teen Girls on Business* study (2002) made clear that girls do not understand connections between their values and business careers. We suspect that other careers may be less appealing to girls for similar reasons (Martin, et al, in review). In this context it is worth pointing out that 27% of the middle school girls would select a job in medicine, where the connection to helping others is clear and direct, as opposed to a career in engineering or the hard sciences where the social impact may be less obvious. Making an explicit connection between science (such as studying water quality) and the beneficial impact on a water-starved community is what van Eijck and Wolff-Michael (2009) describe as "authentic science experiences" and may help girls remain engaged in science by seeing the benefits that result.

Our findings suggest that additional efforts from educators, guidance counselors, and school administrators can make a difference. For teachers, recognizing that middle school boys and girls understand the gendered landscape is vital. Focused discussions about gender, starting with what it is and the multitude of ways it is conveyed, represent a good start. Contesting images that perpetuate gendered career stereotypes and discussing the challenges facing both men and women when moving into careers inconsistent with those stereotypes is another essential conversation. Further, teachers can create and facilitate learning experiences for students to explore how workplace benefits like family leave, that would seem to benefit women, ultimately benefit everyone. These suggestions are consistent with the findings of Johns, Schmader, and Martins (2005) that conversations about gender and gender role expectations help to mitigate the power of those messages; though their work was with college students, it appears reasonable to believe that earlier interventions would not also be as, if not more, effective.

One proven way of keeping girls on the road to leadership and broader career options is to encourage them to take courses that either allow them to explore or prepare for those career interests. Indeed, a first step *out* of the pipeline may involve making curricular choices in middle and high school that may impact college options and, ultimately, career options (Akos, Lambie, Milsom, & Gilber, 2007). Because most middle schoolers have minimal work-related experience, their knowledge of

careers tends to be limited and prone to stereotypes (Jantzer et al., 2009). Therefore, guidance counselors are a critical source of "real" work and career information.

School administrators should know that single-sex experiences matter. The learning experiences in Girl Scouts can serve as a proxy for the leadership and confidence-building that can occur for girls in a single-sex environment that focuses on their needs. However, we would expand beyond thinking of how single-sex learning experiences could benefit girls to include how carving out single-sex space in the curriculum or in the school day could also benefit boys. From our survey, it is alarming to find that boys rated lowest across all factors of self-confidence. Yet, at the same time, boys believe they have more job opportunities than girls. How does this misalignment between low confidence and positive "outcome expectations" play out? If a boy expects that it will be easy to acquire a job, does that convert into less effort in middle school studies? DiPrete and Buchman (2013) explain this misalignment: historically, boys could put less effort into education and still get high-paying jobs in manufacturing and construction. That is no longer the case. Boys, as well as girls, may benefit from single-sex conversations about gender dynamics and how they may limit career choices, the challenges of the workplace, and the need for preparation. Single-sex learning experiences might also provide boys with opportunities for leadership unencumbered by social gendered pressures.

Conclusion

The data, both primary and secondary, included in this article are intended to add to middle school educators' understanding of their students' nascent career interests, and the dampening effect social gendered roles and messages have on the interests of their students, particularly female students. We offer our findings with caution, recognizing that our sample was 82% Caucasian and limited to the Northeastern United States, and that the impact of Girl Scouting may only be somewhat generalizable to other single-sex environments. However, our intention is to stimulate the thinking of educators who are positioned to keep girls in the pipeline to leadership; to offer educators new explanations for the dynamics they witness and help create every day in the classroom; and to provide corroboration and support for the challenging work they are already doing to prepare a diverse pool of future workers and leaders.

References

Akos, P, Lambie, G.W., Milsom, A., & Gilber, K. (2007). Early adolescents' aspirations and academic tracking: An exploratory investigation. *Professional School Counseling, 11*(1), 57–64.

Beede, D., Julian, T., Langdon, D., McKittick, G., George, K., Khan, B., & Doms, M. (2011). Women in STEM: A gender gap to innovation. U.S. Department of Commerce, Economics and Statistics Division, p. 2.

Boushey, H., & O'Leary, A. (2009). The Shriver Report: A woman's nation changes everything. Center for American Progress (p. 19). Retrieved from: www.americanprogress.org/issues/women/report/2009/10/16/6789/the-shriver-report

Catalyst (2014). U.S. Women in Business. Retrieved from: www.catalyst.org/knowledge/us- women-business

College Board (2012). *2012 College-Bound Seniors: Total Group Report*. Retrieved from: http://media.collegeboard.com/digitalServices/pdf/research/TotalGroup-2012.pdf

Cunningham, M. (February 2001). The Influence of Parental Attitudes and Behaviors On Children's Attitudes toward gender and household labor in early childhood. *Journal of Marriage and Family, 63*, 111–122.

Diekman, A. B., & Goodfriend, W. (2006). Rolling with the changes: A role congruity perspective on gender norms. *Psychology of Women Quarterly, 30*, 369–383.

Diekman, A. B., & Eagly, A. H. (2000). Stereotypes as dynamic constructs: Women and man of the past, present, and future. *Personality & Social Psychology Bulletin, 26*, 1171–1188.

DiPrete, T. A., & Buchman, C. (2013). *The rise of women: The Growing Gender Gap in Education and What It Means for American Schools*. New York, NY: Russell Sage.

Eagly, A. H., & Carli, L. L. (2007) Women and the Labyrinth of Leadership. *Harvard Business Review, 85*(9), 63–71.

Francis, B. (2002). Is the future really female? The impact and implications of gender for 14–16 year olds' career choices. *Journal of Education and Work, 15*(1), 75–88.

Frome, P., Alfeld, C. J., Eccles, J. S., & Barber, B. L. (2006). Why don't they want a male-dominated job? An investigation of young women who changed their occupational aspirations. *Educational Research and Evaluation, 12*(4), 359–372.

Galinsky, E. & Backon, L. (2009) 2009 *Guide to bold ideas for making work work*. New York, NY: Families and Work Institute. Retrieved from: http://familiesandwork.org/site/research/reports/main.html#boldideas

Galinsky, E., Aumann, K., & Bond, J. T. (2011). *Times are changing: Gender and generation at work and at home*. New York, NY: Families and Work Institute. Retrieved from: http://familiesandwork.org/site/research/reports/Times_Are_Changing.pdf

Gibson, L. R. (1988). Beyond the Apron: Archetypes, Stereotypes, and Alternative Portrayals of Mothers in Children's Literature. *Children's Literature Quarterly, 13*(4), 177–181.

Hartung, P. J., Porfeli, E. J., & Vondracek, F. W. (2005). Child vocational development: A review and reconsideration. *Journal of Vocational Behavior, 66*, 385–419

Herr, N. (2007). *Television & health*. A. C. Nielson Co. Retrieved November 12, 2013 from: http://www.csun.edu/science/health/docs/tv&halth.html

Jantzer, A. M., Stalides, D. J., & Rottinghaus, P. J. (2009). An exploration of social cognitive mechanisms, gender, and vocational identity among eighth graders. *Journal of Career Development, 36*(2), 114–138.

Jaschik, S. (2010, Sept. 14). Women Lead in Doctorates. *Inside Higher Education.* Retrieved December 12, 2013 from: http://www.insidehighered.com/news/2010/09/14/doctorates

Jodl, K. M., Michael, A., Malanchuk, O., Eccles, J. S., & Sameroff, A. (2001). Parents' roles in shaping early adolescents' occupational aspirations. *Child Development, 72*(4), 1247–1265.

Johns, M., Schmader, T., & Martens, A. (2005). Knowing is half the battle: Teaching stereotype threat as a means of improving women's math performance. *Psychological Science, 16*(3), 175–179.

Joslyn, H. (2009). A man's world. *The Chronicle of Philanthropy.* Retrieved from: http://philanthropy.com/article/A-Mans-World/57099

Kekelis, L., Wepsic, A., & Heber, E. (2005). Hurdles in the pipeline: Girls and technology careers. *Frontiers: A Journal of Women's Studies, 26*(1), 99–109.

Lent. R. W., & Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior, 45*, 79–122.

Maltese, A. V., & Tai, R. H. (2010). Eyeballs in the fridge: Sources of early interest in science. *International Journal of Science Education, 32*(5), 669–685.

Marlino, D., & Wilson, F. (2003). *Teen girls on Business: Are they being empowered?* Boston, MA: Simmons College School of Management and The Committee of 200.

Martin, K., Grossman, D., Shapiro, M., Carter, S., Deyton, P., & Hammer, D. (in review). Dreaming big: Future careers in STEM for middle school girls. *Professional School Counseling Journal.*

McCabe, J. (2011). Gender in Twentieth-Century Children's Books: Patterns of Disparity in Titles and Central Characters. *Gender & Society, 25*(1), 197–226.

Narahara, M. (1998). Gender stereotypes in children's picture books. ERIC Document Reproduction Service. No. ED 419248.

Prentice, D. A., & Carranza, E. (2002). What women and men should be, shouldn't be, are allowed to be and don't have to be: The contents of prescriptive gender stereotypes. *Psychology of Women Quarterly, 26*(4), 269–281.

Raley, S., & Bianchi, S. (2006). "Sons, Daughters, and Family Processes: Does Gender of Children Matter?" *Annual Review of Sociology 32*(1), 401–421.

Rothwell, J. (June 2013). The Hidden STEM Economy. Metropolitan Policy Program at the Brookings Institute. Retrieved from: http://www.brookings.edu/research/reports/2013/06/10-stem-economy-rothwell

Shapiro, M. L., Deyton, P., Martin, K. L., Carter, S., Grossman, D., & Hammer, D. (2012). Dreaming big: What's gender got to do with it? *CGO Insights, 35.* Boston, MA: Center for Gender in Organizations.

Sharma, C. (October 21, 2011). STEM jobs pay more, reduce the wage gap between Men and women. *Duke Chronicle.* Retrieved from: http://www.dukechronicle.com/articles/2011/10/21/stem-jobs-pay-more-reduce-wage-gap-between-men-and-women

Smith, S. L., Choueiti, M., & Stern, J. (2013). Occupational aspirations: What are G-rated films teaching children about the world of work? Geena Davis Institute on Gender in Media. Retrieved from: http://www.thegeenadavisinstitute.org/downloads/key-findings-occupational-aspirations-2013.pdf

Valian, V. (1998). *Why so slow? The advancement of women.* Cambridge, MA: MIT Press.

van Eijck, M., & Wolff-Michael, R. (2009). Authentic science experiences as a vehicle to changes students' orientations towards science and scientific career choices. *Cultural Study of Science Education, 4*, 611–638.

Wang, W., & Parker, K. (2011). Women see value and benefits from college; men lag on both fronts, survey finds. Pew Research Center. Retrieved from: http://pwesocialtrends.org/2011/08/17/women-see-value-and-benefits-of-college-men-lag-on-both-fronts-survey-finds/

Watson, M., & McMahon, M. (2005). Children's career development: A research review from a learning perspective. *Journal of Vocational Behavior, 67*(2) 119–132;

Weisgram, E. S., & Bigler, R. S. (2007). Effects of learning about gender discrimination on adolescent girls' attitudes toward and interest in science. *Psychology of Women Quarterly, 31*(3), 262–269;

Wilbourne, M. P., & Kee, D. W. (2010). Henry the nurse is a doctor, too: Implicitly examining children's gender stereotypes for male and female occupational roles. *Sex Roles, 62*(9–10), 670–683.

Witt, S. (1997). Parental influence on children's socialization to gender roles. *Adolescence Summer 1997.* http://gozips.uakron.edu/~susan8/parinf.htm

Wood, A. H., & Eagly, A. H. (2002). A cross-cultural analyses of the behavior of women and men: Implications for the origins of sex differences. *Psychological Bulletin, 128*(5), 699–727.

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