

Untangling Life Goals and Occupational Stereotypes in Men's and Women's Career Interest

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Abstract Gender Role Congruity Theory predicts that women would be more attracted to masculine-stereotyped occupations and men would be more attracted to feminine-stereotyped occupations if the occupations were perceived as affording goals that aligned with their gender roles. This study of college STEM (science technology engineering, and mathematics) students systematically examined the impact of occupation stereotypes and life goals related to career status, family, and helping others on career interest. Participants, drawn from introductory STEM classes ($N = 186$, 88 female) at a public university in the Southeastern U.S., indicated their preferences between pairs of occupations that differed in their gender stereotype. Within each occupation pair, one occupation was described as compatible with one of three goals (high salary, family-friendly, and helping others). A 1 year follow-up was conducted on 148 of the original and an additional 52 new participants ($N = 200$, 103

female). Results indicated that men showed greater interest in masculine occupations, regardless of the goal affordance of the alternative feminine occupation. For women, occupations with higher salaries received greater interest ratings than occupations associated with helping others (masculine or feminine stereotyped) and family friendly work hours (masculine stereotyped only). For women, family-friendly occupations were rated similarly to higher salary occupations, only in the feminine-stereotyped conditions. Findings were generally replicated at the second time point. These counterintuitive findings suggest the need for research to examine how gender differences in life goals change over the early adult years for women and men in STEM and other fields.

Keywords STEM careers · Gender roles · Role congruity theory · Occupation gender stereotypes · Career interest

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Introduction

There is a shortage of capable and qualified workers in the science, technology, engineering, and mathematics (STEM) sector of the U.S. workforce. Although this gap could be filled by able-bodied women – indeed, emerging data indicates that the number of women in STEM fields is on the rise – many women do not consider this an option (e.g., Beede et al. 2011). Among the women who do select such a career, many gradually drop out, and their dropout rate is far greater relative to men (Barreto et al. 2009). This phenomenon, called the “leaky pipeline” (Goulden et al. 2009, p. 2), has been widely studied (Farmer et al. 1999; Ferriman et al. 2009; Jones et al. 2000), and a seminal review by Ceci and colleagues (Ceci et al. 2009) suggests that a combination of lifestyle choices, career preferences, and social pressures account for the dearth of women in

STEM. The current study systematically examined two of these factors, lifestyle choices and social pressures. (It should be noted that all cited studies are based on US samples with the exception of Bandura et al. 2001 [Italian] and Hakim 2006 [British].)

Gender differences in *lifestyle choices* that affect career decisions generally fall into three categories of long-term life goals, with women more strongly endorsing the first two compared to men: 1) marriage and family, 2) helping others, and 3) work success in terms of advancement within the organizational hierarchy and salary gains (Ceci et al. 2009). Most male-dominated careers are not typically perceived as fulfilling the first two goals, which may account for why many women do not pursue these careers (Diekmann et al. 2010, 2011; Diekmann and Steinberg 2013). *Social pressures* responsible for gender differences in career preferences take the form of societally endorsed occupation gender stereotypes. (In accordance with Frieze and Chrisler (2011), we refer to gender when discussing men, women, and the societal pressures.) Occupations are viewed as masculine when more men than women hold these occupations and the skills that the occupations require for success are perceived as stereotypically masculine (e.g., mathematical, analytical, and problem solving skills; White and White 2006; Guadagno and Cialdini 2007). The objective of the present study is to examine empirically the impact of life goals and occupation stereotypes on career interest among U.S. undergraduate students enrolled in STEM courses early in their college years. This study fills a gap in the literature by disambiguating the roles that gender-role congruent life goals and occupation gender stereotypes have on men's and women's interest in pursuing a STEM career.

Life goals during the first years in college are particularly important because they guide college-related career decisions that will affect later adult roles (Arnett 2000). Gendered expectations and pressures for fulfilling certain social roles affect which life goals take priority during this time. The attrition of women in STEM majors over the college years has been attributed to their attempt to balance different life goals (e.g., career, marriage, helping others, having children) and the roles that accompany these goals (e.g., scientist, wife, mother; Ceci et al. 2009; Diekmann et al. 2010). Although it has been hypothesized that women would be more favorably disposed toward masculine occupations if they were more compatible with achieving other traditionally feminine roles (Cheryan 2012; Diekmann et al. 2010; Diekmann and Steinberg 2013), there has been little systematic work examining this hypothesis. This is one of the primary aims of the present investigation. The current study's examination of gender roles and occupation stereotypes is grounded in three related theories: Social Role Theory (Eagly 1987), Role Congruity Theory (Diekmann and Eagly 2008), and Precluded Interest Theory (Cheryan and Plaut 2010).

Social Role and Role Congruity Theories

Social Role Theory proposes that gender differences in behavior result in part from historical gender divisions in labor, with men typically providing for the family and women staying home and taking care of their children (Eagly 1987; Wood and Eagly 2010). In interpreting gender differences in career choices, Ceci et al. (2009) and Eagly et al. (2000) theorized that such differences are consistent with normative social role expectations, with men assuming more *agentic* roles (e.g., assertive, powerful, independent) and women assuming more *communal* roles (e.g., concern for the welfare of others, interpersonally sensitive, emotionally expressive). Diekmann and colleagues (Diekmann et al. 2010, 2011; Evans and Diekmann 2009) propose that the adoption of communal or agentic gender roles influences long term goals, which in turn affects career interests.

Life goals consistent with the communal role include those related to marriage, family, and helping others (Eagly 1987). In contrast, life goals consistent with the agentic role include leadership positions at work, independence in one's contributions in the workplace, and being a good provider. According to the Role Congruity Theory, when men and women internalize behavioral expectations based on gender roles, they also endorse goals that are consistent with their gender roles (Diekmann and Eagly 2008). As a result, women generally orient toward occupations they perceive as consistent with their overall life goals, which are generally more communal in nature relative to men (Diekmann et al. 2011). Consequently, differences in the value placed on agentic and communal roles are commonly used to explain the gender gap in career interests (e.g., Diekmann and Steinberg 2013).

Two communal goals have received the most attention in explaining women's career interests. First, family-related goals (i.e., marriage and children) are most frequently mentioned as a factor in women leaving STEM careers (Ceci et al. 2009; Ferriman et al. 2009). Second, women tend to have a preference for occupations that involve helping others. This gender difference appears as early as pre-adolescence, with girls orienting toward occupations that help others more frequently than boys (Bandura et al. 2001; Jones et al. 2000). Additional evidence indicates that women become attracted to science fields when the occupation is associated with helping people (Ceci and Williams 2011; Thom 2001).

A third set of agentic goals related to career prestige and financial success are valued more by men than women (Ceci et al. 2009; Guadagno and Cialdini 2007; Hakim 2006). STEM occupations are generally higher paying and more prestigious than typical feminine-stereotyped occupations (e.g., secretary, nurse), which may in part account for men's attraction to these careers. The combination of women's preference for occupations that afford family and helping goals

and men's preference for occupations that afford prestige and financial goals might partially explain the gender gap in STEM occupations.

A logical extension of this reasoning is that traditionally masculine jobs could be more appealing to women if these occupations accommodated communal roles (Diekmann et al. 2010; Diekmann and Steinberg 2013), and similarly, traditionally feminine occupations could be more appealing to men if they satisfied agentic roles (Forsman and Barth 2012). In support of this contention, Diekmann et al. (2010) found that the endorsement of communal goals was negatively related to interest in STEM for both men and women in a U.S. sample. Yet, when the daily activities of a scientist were framed as communal by emphasizing the collaborative aspects of the occupation, women perceived STEM occupations as fulfilling communal goals and reported more positivity towards the careers relative to women who were focused on the agentic aspects of the occupations (Diekmann et al. 2011).

It is important to note that some research has failed to find strong gender differences in the importance that U.S. college students place on different life goals (Barth et al. 2010; Ferriman et al. 2009; Roberts and Robins 2000). Barth et al. (2010) found that college-aged men and women entering into STEM majors did not differ in their *ratings* of the importance of family, marriage, and career goals. Surprisingly, in a forced choice situation *men*, on average, prioritized family goals higher than women. Similarly, Ferriman et al. (2009) reported no gender differences in the importance that 25-year-old science and math graduate students placed on having children, leisure time outside of work, and making a contribution toward the greater good of society. Although 10 years later, women with children placed a greater value on having flexible schedules. Other studies (e.g., Harrington et al. 2010) indicate that men also seek work that is flexible and allows for family time. Together, this research suggests that women may not be so different from their male counterparts in the importance they place on certain life goals. However, other social pressures related to occupation stereotypes might make it difficult for men and women to choose an occupation that is counter to normative expectations for their gender, despite the long term goals it might help them achieve.

Precluded Interest Theory and Occupation Stereotypes

Occupation stereotypes emerged in part due to assumptions of whether men or women typically have the necessary skills or personality characteristics to succeed in an occupation and in part due to the base rates of men and women who hold an occupation (White and White 2006). Precluded Interest Theory (Cheryan and Plaut 2010) suggests that when choosing a major or career, people compare themselves to the stereotypical person in that field. When individuals perceive themselves to be similar to that stereotype, they

show increased interest in and express more confidence about their success in that field. Cheryan (2012) further suggests that occupation gender stereotypes are a primary component of assessing fit with a career. In a recent U.S. study, Cheryan et al. (2012) reported that women's beliefs about their own potential success in a computer science major were mediated by the extent to which they saw themselves as different from a computer science student role model with whom they had just interacted. Women who interacted with the stereotypical computer science role model saw themselves as less similar and less likely to be successful as a computer science major. Changing the description of computer scientists from being incompatible with the feminine gender role (i.e., having poor interpersonal skills) to being more compatible increased women's interest in this career (Cheryan et al. 2013).

It is important to note that men seem to be less affected by alterations in the stereotypic characteristics associated with a particular career (Cheryan et al. 2013; Forsman and Barth 2012). For example, Forsman and Barth (2012) found that male STEM students' interest in feminine careers was primarily affected by whether the title of the occupation conveyed a feminine stereotype or not, as opposed to the details in the occupation description. Similarly, DiDonato and Strough (2013) report that U.S. undergraduates believe that men should only hold masculine-stereotyped occupations, but women are suited to hold both masculine and feminine occupations. Thus, men, relative to women, may be more likely to yield to traditional gender role conformity pressure and orient toward masculine careers (Jacobs 1993).

The Present Study

Research from the three relevant theoretical perspectives, Social Role, Role Congruity, and Precluded Interest, suggests that women should be more interested in masculine-stereotyped occupations if they support traditionally feminine social roles and goals. Although less attention has been given to men's interest in feminine occupations, a comparable proposition should hold for them. The present investigation contributes to the literature by systematically investigating the interactive influence of life goals and occupation gender stereotypes on men's and women's career interest. This is accomplished by examining participants' relative preference for occupations that vary in their gender stereotype and affordance of helping, family and high salary goals in a 2 (gender stereotype) \times 3 (goal affordance) design. We investigate these issues by testing three hypotheses, with the third being of greatest interest:

1. **Both men's and women's career preferences will be similarly affected by occupational gender stereotypes.** If men and women choose careers primarily based on

gender stereotypes, then we would expect an interaction between participant gender and occupation stereotype, such that women will prefer feminine-stereotyped occupations and men will prefer masculine-stereotyped occupations, consistent with Precluded Interest Theory.

2. **Men will show preference for occupations that accommodate agentic goals and women will show preference for occupations that accommodate communal goals.** The present study focused on three goals: 1) raising a family, 2) helping others, and 3) being a good provider, operationalized through high salaried occupations. The first two goals are communal, thus the expectation was that women would prefer occupations that align with these goals more strongly than men. Since the third goal is agentic, it was expected that occupations aligned with it would be perceived more favorably by men than by women. These goals were selected because they are most often cited in the literature on gender differences in STEM careers.
3. **Gender, occupational stereotypes, and goal affordances will interact to affect occupational preferences.** At the heart of this study is the question of whether men and women would eschew occupation gender stereotypes in favor of an occupation that was more compatible with one of these goals. For example, men might prefer masculine-stereotyped occupations, unless a feminine occupation had a higher salary. Similarly, women might prefer feminine-stereotyped occupations, unless a masculine occupation aligned with a communal goal.

Participants' occupation preferences were examined with a new instrument that disambiguates the influence of gender role congruent life goals and occupation stereotypes. The new instrument uses a forced-choice format to assess the degree to which women would forgo a feminine occupation in favor of a masculine one that afforded a helping or family goal and the degree to which men would forgo a masculine-stereotyped occupation in favor of a feminine one that afforded a higher salary, an agentic career goal.

There are two additional unique aspects of the study that address weaknesses in previous research. First, this study focused on students who were early in their college program and enrolled in introductory STEM courses. The women in this sample were of interest since they are affected by the leaky pipe issue in STEM fields. Because the vast majority of the research cited above focused on undergraduate students enrolled in Introductory Psychology, (e.g., Cheryan et al. 2012, 2013, Diekmann et al. 2010, 2011), a contribution of the present investigation is that the research questions were evaluated with a sample of men and women who, as evidenced by their enrollment in the introductory STEM courses in which women are typically underrepresented, had entered college with both STEM ability and interest in a STEM career.

A second strength of this study is that data were collected at the beginning and end of the academic year, which provided an opportunity to assess the reliability of the new instrument developed for this study. Moreover, the stability of the relationships among life goals, occupation stereotypes, and gender were examined over time. This aspect of the project is valuable given the recent emphasis on the importance of replication in psychological research (The Open Science Collaboration 2012). Specifically, by evaluating the stability and reliability of the findings, a core scientific tenant that scientific results should be replicable was addressed. As noted earlier, gender differences in the value placed on agentic and communal life goals are not consistently found, suggesting that reliability of research on goal affordances could be an issue. Furthermore, both the sample and the instrument (Life Goals and Gender Stereotypes) used in this study are unique aspects of the project, and if the results differ from those of previous studies, it is valuable to demonstrate that they can be reliably found within the sample.

Method

Participants

This study is part of a larger project that focused on a number of factors that affect interest in STEM majors and careers among students from 5th grade through college. Participants for the current study were a subset of a larger college sample. Table 1 provides sample description statistics. Undergraduate students at a large, public university in the Southeastern U.S. were recruited from entry-level engineering, calculus, physics, chemistry, and geology courses on the first day of classes in the 2008 fall semester. A member of the research team went into the classrooms, stated the purpose of the study and read the consent statement to the students. Those who were interested in participating were asked to stay after class to complete a *Math, Science, and Technology Questionnaire (MSTQ)*, which included questions on students' perceived abilities, attitudes, interest, social support, and career goals as they related to science, math, and computer science academic subjects and careers. Out of the total number of students in the classes from which the recruitment occurred, approximately 60 % ($N = 980$) agreed to participate. The breakdown of recruitment from the different courses is as follows: 26 % Chemistry, 53 % Engineering, 11 % Calculus, 7 % Physics, and 3 % were recruited from Geology or an interdisciplinary STEM course. Students who completed the MSTQ were also asked to indicate if they were interested in completing an additional *Factors in Career Decision-Making (FCD)* questionnaire for \$20. About one-third of the participants ($n = 326$) who completed the MSTQ indicated that they were willing to complete the FCD. The samples at Time 1 and Time 2 discussed in this paper were drawn from this subset of participants.

Table 1 Participant characteristics

Characteristic	Time 1		Time 2	
	Men N = 98 (52.9 %)	Women N = 88 (47.1 %)	Men N = 97 (51.5 %)	Women N = 103 (48.5 %)
Age: Median/(range)	18 yrs. (17–23)	18 yrs. (17–20)	19 yrs. (18–23)	19 yrs. (18–23)
Race: N/(%)				
White non-Hispanic	84 (84.8 %)	70 (79.5 %)	82 (84.5 %)	80 (77.7 %)
Black/Afr. Amer.	3 (3.0 %)	13 (14.8 %)	2 (2.1 %)	17 (16.5 %)
Asian	6 (6.1 %)	2 (2.3 %)	4 (4.1 %)	1 (1.0 %)
All others	5 (6.0 %)	3 (3.4 %)	9 (9.3 %)	5 (5.8 %)
HS STEM courses ^a : Mean (<i>SD</i>)	3.1 (.92)	3.4 (1.06)	3.0 (.90)	3.3 (1.06)
AP STEM ^b : N/(%)	52 (52.5 %)	54 (61.4 %)	55 (56.7 %)	61 (59.2 %)
HS GPA ^c : Median	Above 3.8	Above 3.8	Above 3.8	Above 3.8
First Sem. College: N/(%)	92 (92.9 %)	84 (95.5 %)	1 (1.0 %)	0 (.0 %)
Major: N/(%)				
Engineering	63 (64.3 %)	52 (59.1 %)	59 (60.2 %)	43 (41.7 %)
Biology	4 (4.1 %)	13 (14.8 %)	12 (12.2 %)	19 (18.4 %)
Pre-Professional Health	10 (10.2 %)	4 (4.5 %)	5 (5.1 %)	18 (17.5 %)
Chemistry	4 (4.1 %)	9 (10.2 %)	5 (5.1 %)	5 (5.8 %)
Computer Science	8 (8.2 %)	0 (.0 %)	2 (2.0 %)	5 (4.9 %)
Mathematics	0 (.0 %)	2 (2.3 %)	1 (1.0 %)	2 (2.0 %)
Non-STEM	4 (4.1 %)	6 (6.8 %)	16 (5.5 %)	10 (12.0 %)
Missing	5 (5.1 %)	2 (2.3 %)	0 (.0 %)	2 (2.0 %)

^a Participants indicated if they had taken any of the following courses in high school: Pre-Calculus, Calculus, Chemistry, Physics, Anatomy/Physiology, Marine Biology, Zoology, Engineering, and any other science. Scores are the number of courses

^b Participants indicated if they had taken any of the following AP courses: Calculus, Chemistry, Physics, and Biology. Percentages are the number who took at least one of the listed AP courses

^c Students reported their high school GPA by selecting one of five pre-set ranges: 1.9 or less, 2–2.4, 2.5–2.9, 3.0–3.4, 3.5–3.7; 3.8 or higher

Time 1

Individuals who expressed interest in the FCD ($N = 326$), were contacted during the fall 2008 term using email, phone, and

class solicitations. For research design purposes, it was desirable to keep the initial MSTQ and FCD surveys within a few weeks of each other, so recruitment of the sample was halted after approximately a month of school, resulting in a final sample for Time 1 of 186 individuals (88 females).

Table 1 provides demographic information about the sample. Participants were predominantly 18 years old, White-non-Hispanic and in their first semester of college. No participant had attended college for more than three semesters. To gauge participants' readiness to pursue a STEM major or career, they were asked to indicate the STEM courses they had taken in high school from a list provided. (A space was provided to write in courses not in the list). The mean number of high school STEM courses beyond required high school algebra, biology and introductory physical science was approximately three. Over half of the students had taken at least one Advance Placement (AP) science or math course and the median GPA was high for males and females. Importantly, a MANOVA comparing men and women with complete data on the number of high school STEM courses, number of AP STEM courses, and high school GPA was not significant, $F(3, 169) = 1.06$, $p = .366$. Together this information indicated that this sample was largely STEM majors and had a reasonably high level of experience with STEM courses prior to the point at which the survey was completed.

Time 2

Approximately 7 months later (spring term 2009); the 186 Time 1 participants were re-contacted through email, text messages, and phone calls to complete both questionnaires again for \$20. From the Time 1 sample 148 participants were retained (80 % retention rate). Most of the students who were not retained failed to respond to our attempts to reach them. To make-up for the shortfall, STEM majors who had completed the Time 1 MSTQ, but not the FCD (and who had expressed interest in doing so), were contacted to reach a total of 200 participants (103 female). See Table 1 for demographic characteristics. An examination of the demographic characteristics of those retained and not retained indicated that the majority of those who were not retained were White (89 %) and were the same age as those who were retained (18 years). Comparisons between those retained and those not retained on measures of high school courses, AP courses, high school GPA, and semester in college did not reveal significant differences between the two groups. In addition, comparisons between those retained and those not retained on the measures described below did not yield significant differences. These analyses suggest that any cases missing at Time 2 were missing at random. Finally, similar to Time 1, there were no gender differences in the Time 2 sample on the number of high school STEM courses, the number of AP STEM courses, or high school GPA, $F(3, 179) = 1.89$, $p = .134$.

Procedure

The procedures for Time 1 and Time 2 were similar. Participants completed the survey either in a classroom or empty office space on campus. Participants arrived individually or in small groups, and the researchers asked them to complete the FCD questionnaire that included the Life Goals and Gender Stereotypes measure. Students first read a consent statement that explained their right to withdraw from the study and the confidentiality of their answers. The researcher briefly explained a little about the type of items they would encounter in the FCD and answered any questions before participants began. Questionnaire booklets were provided, and students recorded their answers on a separate machine-readable answer sheet. Participants then worked through the questionnaire booklet at their own pace, typically taking less than 30 min to finish. They were paid at the completion of the study.

Instrument

The *Life Goals and Gender Stereotypes* (LGGS) instrument was created to specifically address the main hypotheses of this study and incorporated a 2 (Gender Stereotype: masculine vs. feminine) \times 3 (Goal Affordance: helping vs. family-friendly vs. salary) within subjects design. The LGGS was developed for use across a wide grade range (from fifth grade through college), so that developmental changes in career interest could be examined. As a result, the instrument was necessarily short, and items were brief to accommodate younger students' attention capacity. Participants were presented with 18 pairs of occupation descriptions that included a brief phrase describing what the occupation involved (used to help manipulate the helping goal affordance), starting salary (*average, good, very good, or excellent*), work conditions (hours worked per week and work schedule for the raising a family), and education required post high school (filler information, not connected to any goal). All of the information was visually salient and easily compared between the two occupations. See examples in Table 2; the complete instrument is in the Appendix. Because students were not expected to have a great deal of knowledge about wages relative to living standards, the use of dollar amounts for salary was avoided. This point is supported by additional research from an independent sample of STEM majors that indicated that starting salaries might be overestimated by STEM majors (Roberts et al. 2014). Furthermore, this instrument was also used in research with children as young as fifth grade for whom accurate knowledge about the relationship between salaries and living standards was even less likely. Using terms like excellent, good, and average also allow the method to be used in additional studies many years into the future without adjusting the salary for each occupation to account for inflation.

Masculine and feminine occupations were selected based on U.S. Labor Department information on the representation of women in the broad class of occupations and on informal polling among our colleagues. Occupation gender stereotypes were further confirmed in a separate study conducted with a sample of 44 (26 female) Psychology 101 undergraduates. For each of the 36 occupations in the measure, participants rated who (men or women) generally held the occupation on a 7-point scale, 1 = *Most often held by MEN*, 4 = *Equal*, and 7 = *Most often held by WOMEN*. *T-tests* comparing the masculine and feminine occupation for each of the 18 pairs in the LGGS were all significant and in the expected direction. In addition, masculine and feminine occupation scales were created by averaging the ratings across all of the occupations hypothesized to fit each stereotype (18 occupations for each scale). Coefficient alphas for the scales were .85 and .79 for the masculine and feminine scales, respectively. A *t-test* comparing the two scale means was significant $t(43) = 19.91$, $p < .001$, $M_s = 2.6$ and 5.3 for masculine and feminine occupations, respectively. Finally, a 2 (Participant Gender) \times 2 (Occupation Stereotype) repeated measures ANOVA was conducted, which revealed no participant gender effects for the ratings. (More information about these results is available from the first author.)

The presentation of the occupation pairs was manipulated so that there were six types of contrasting pairs (three items each). Each pair had one feminine occupation and one masculine occupation. For three sets of items, the feminine occupation afforded one of the three goals (helping others, family-friendly work hours, or higher salary); whereas the opposing masculine job did not, but was identical with respect to other aspects of the job description. Similarly, for three sets of items the masculine occupation afforded one of the three goals; whereas the opposing feminine job did not, but was identical with respect to other aspects of the job description.

The occupation pairs were presented in a fixed order. Within a pair of occupations, presentation was counterbalanced so that feminine and masculine occupations were presented first approximately the same number of times. Participants rated their preference between the two occupations on a 4-point scale with the following options: *Definitely prefer career A*, *Sort of prefer career A*, *Sort of prefer career B*, and *Definitely prefer career B* (see Appendix).

Measures

Six job preference scores were created by averaging responses on the three items of each occupation type in the research design: masculine-helping, masculine-family-friendly, masculine-salary, feminine-helping, feminine-family-friendly, and feminine-salary. Scores ranged from 1 to 4, with higher scores indicating a stronger preference for the occupation type.

Table 2 Examples of job pairs from the life goals and gender stereotypes instrument

1. *Masculine-Helping: Job A is masculine and affords a helping goal; Job B is feminine and does not afford a helping goal.*
- A. Paramedic—Help people in emergency situations when they are seriously injured or ill.
- Starting salary: Good
 - Work Conditions: 40 h per week, so there is an average amount of time for being with family
 - Education: 1 year of training after high school
- B. Jewelry designer— Make unique, attractive, jewelry to sell in shops.
- Starting salary: Good.
 - Work Conditions: 40 h per week, so the amount of time from family is average.
 - Education: 1 year of training after high school.
2. *Masculine-Family-friendly: Job A is masculine and affords a family goal; Job B is feminine and does not afford a family goal.*
- A. House Carpenter— Build the doors, cabinets and other things made of wood for a new house.
- Starting salary: Average
 - Work conditions: Usually get to decide when and where they work, schedules allow a lot of time for raising a family.
 - Education: 2 years of training after high school
- B. Florist— Make attractive flower arrangements for hotels, businesses and special occasions like weddings.
- Starting salary: Average
 - Work conditions: Often work on weekends and evenings, it is sometimes hard to find time to be with family.
 - Education: 2 years of training after high school
3. *Feminine-Salary: Job A is masculine and does not afford a salary goal; Job B is feminine and affords a salary goal.*
- A. Forest Ranger—Manage the wooded areas of national parks and forests to make sure that trees and natural areas are healthy.
- Starting salary: Average
 - Work conditions: Regular schedule of 40 h per week.
 - Education: 4 years of training after high school
- B. Interior Designer— Create attractive office and home designs that can be sold to customers.
- Starting salary: Excellent.
 - Work conditions: Interior designers keep a regular work schedule of 40 h per week.
 - Education: 4 years of training after high school.

Participants indicated which job they preferred (Job A or Job B) on a 4-point scale (1 = Definitely Job A, 2 = Probably Job A, 3 = Probably Job B, 4 = Definitely Job A). The actual job titles were filled in for A and B. The order of presentation of masculine and feminine jobs was random across the 18 occupation pairs. Items were scored so that higher scores indicated preferences for the job that afforded the helping, family-friendly, or salary goals

As noted earlier, the LGGS was developed to assess career interest for students from fifth grade to college. In previous research with a younger population of fifth, eighth, and high school students (Barth and The Alabama STEM Education

Research Team 2014) correlations between each of the six scores across a 1 year interval were high and significant, with correlations ranging from .72 (masculine-helping) to .66 (masculine-family and masculine-salary), Median $r = .69$. For the current sample, correlations between Time 1 and Time 2 were somewhat higher than for the younger sample, ranging from .60 (masculine-salary) to .83 (feminine-salary), Median $r = .70$.

Results

Results are presented for Time 1 followed by Time 2 for each research question. Data were analyzed using a 2 (Participant Gender: female vs. male) \times 2 (Occupation Stereotype: masculine vs. feminine) \times 3 (Goal Affordance: helping vs. family-friendly vs. salary) mixed ANOVA design with Participant Gender as a between subjects factor. Stereotype and Goal Affordance were within subjects factors. The dependent variable was preference for a particular occupation type, with higher scores indicating a greater preference. To decompose significant effects, comparisons between conditions were made using Bonferroni corrections and Cohen's d is reported for the significant effects. Tables 3 and 4 present the means and standard deviations for Time 1 and Time 2, respectively. The findings are organized under the three research hypotheses.

Table 3 Time1 occupation preference means and standard deviations

Goal	Women ($N = 88$)		Men ($N = 98$)	
	Occupation Stereotype ¹		Occupation Stereotype ¹	
	Masculine	Feminine	Masculine	Feminine
Help	2.80 ^a (.7351)	2.67 ^a (.6511)	3.48 (.5394)	2.03 (.6253)
Family	2.73 ^a (.8075)	3.05 ^b (.6310)	3.51 (.5204)	2.10 (.5466)
Salary	3.13 ^b (.7789)	3.15 ^b (.7019)	3.51 (.4909)	2.03 (.7714)

Significant differences among the Help, Family, and Salary goal conditions for women are denoted for masculine and feminine occupations by different superscripts within a column. All p 's $\leq .008$. There were no differences for men's ratings across the three goal conditions. Preference scores ranged from 1 to 4, with lower scores indicating lower preference. Standard deviations are in parentheses

¹ Significant differences between masculine- and feminine-stereotyped occupations were found for men, but for women only the masculine and feminine family goal affordance occupation ratings differed. For feminine-stereotyped occupations, women's preference ratings were significantly higher than men's. For masculine-stereotyped occupations men's preference ratings were significantly higher than women's

Table 4 Time 2 occupation preference means and standard deviations

Goal	Women (<i>N</i> = 103)		Men (<i>N</i> = 97)	
	Occupation Stereotype ¹		Occupation Stereotype ¹	
	Masculine	Feminine	Masculine	Feminine
Help	2.69 ^a (.7405)	2.84 ^d (.6208)	3.46 (.5305)	2.12 (.7254)
Family	2.43 ^b (.7982)	3.10 ^e (.5938)	3.46 (.5104)	2.19 (.5868)
Salary	2.93 ^c (.7608)	3.10 ^{ef} (.6354)	3.41 (.4501)	1.96 (.7535)

Significant differences among the Help, Family, and Salary goal conditions for women and men are denoted for masculine and feminine occupations by different superscripts within a column: a vs. c, $p = .053$; a vs. b, $p < .001$; b vs. c, $p < .001$; d vs. e, $p = .021$; d vs. ef, $p = .053$. Scores range from 1 to 4, with lower scores indicating lower preference. Standard deviations are in parentheses

¹ Significant differences between masculine- and feminine-stereotyped occupations were found for both men and women, but for women only the masculine and feminine family goal affordance occupation ratings differed. For feminine-stereotyped occupations, women's preference ratings were significantly higher than men's. For masculine-stereotyped occupations men's preference ratings were significantly higher than women's

Hypothesis 1: Both men's and Women's Career Preferences Will be Similarly Affected by Occupational Gender Stereotypes

Time 1

This hypothesis was evaluated by examining the Occupation Stereotype x Participant Gender interaction, which was significant, $F(1, 184) = 175.98$, $p < .001$, $\eta_p^2 = .489$. An examination of the means for each condition (Table 3) revealed that men evidenced a significant difference between their preference for masculine and feminine jobs (M 's = 3.50, 2.05, respectively); whereas women did not (M 's = 2.89, 2.96, respectively). Simple effect analyses supported these observations, with men showing a greater preference for masculine over feminine-stereotyped jobs, $p < .001$, $d = 3.21$, and women showing no preference between the two, $p = .383$. However, comparisons between men and women indicated that women expressed a greater preference for feminine jobs than men, $p < .001$, $d = 1.85$, and men expressed a greater preference for masculine jobs than women, $p < .001$, $d = 1.30$. To summarize, the predictions for this hypothesis were only partially supported because, although men showed a strong preference for masculine jobs over feminine ones, women did not show a strong preference for feminine over masculine jobs.

Time 2

The Occupation Stereotype x Participant Gender interaction was also significant at Time 2, $F(1, 198) = 223.87$, $p < .001$, $\eta_p^2 = .531$. Simple effect analyses indicated significant effects for women, $p < .001$, $d = .68$, and men $p < .001$, $d = 2.93$. Different from Time 1, women showed a greater preference for feminine jobs than masculine ones (M 's = 3.01, 2.68, respectively). However, similar to Time 1, men showed a greater preference for masculine compared to feminine jobs (M 's = 3.45, 2.09, respectively). Also similar to Time 1, comparisons between women and men indicated that women expressed a significantly greater interest in feminine jobs than men $p < .001$, $d = 1.92$, and men expressed a greater interest in masculine jobs than women, $p < .001$, $d = 1.64$. Thus, this hypothesis was fully supported at Time 2.

Hypothesis 2: Men Will Show Preference for Occupations That Accommodate Agentic Goals and Women Will Show Preference for Occupations That Accommodate Communal Goals

Time 1

This hypothesis was addressed by examining the Goal Affordance x Participant Gender interaction, which was significant, $F(2, 183) = 8.05$, $p < .001$, $\eta_p^2 = .081$. Simple effect analyses indicated that men showed no significant differences in their job preference ratings across the three goals (M 's = 2.75, 2.80, and 2.77 for Helping, Family-Friendly, and Salary, respectively). For women, ratings differed across the three goal conditions goals (M 's = 2.74, 2.89, and 3.14 for Helping, Family-Friendly, and Salary, respectively). In contrast to expectations, women gave higher ratings to jobs that afforded salary goals than jobs that afforded helping or family-friendly goals, p 's $< .001$, d 's = .76, .49, respectively. Thus, this hypothesis was not supported. In addition, it should be noted that family-friendly jobs were rated significantly higher than helping jobs for women, $p = .03$, $d = .32$.

Time 2

The Goal x Participant Gender interaction was significant at Time 2 as well, $F(2, 197) = 13.81$, $p < .001$, $\eta_p^2 = .123$. In contrast to Time 1, simple effect comparisons for men indicated that their interest in jobs that afforded family-friendly goals was greater than their interest in jobs affording salary goals, M 's = 2.83, 2.68, respectively, $p = .030$, $d = .55$. Similar to Time 1, simple effect comparisons indicated that women preferred jobs that afforded salary goals ($M = 3.02$) over positions that afforded helping or family goals M 's = 2.76,

2.76, p 's < .001, d 's = .53, .54, respectively. In contrast to Time 1, preferences for jobs that afforded helping and family goals did not differ. To summarize, this hypothesis was not supported at either Time 1 or Time 2.

Hypothesis 3: Gender, Occupational Stereotypes, and Goal Affordances Will Interact to Affect Occupational Preferences

Time 1

The significant three-way interaction between Participant Gender, Occupation Stereotype, and Goal Affordance, $F(2, 183) = 3.51$, $p < .032$, $\eta_p^2 = .037$, indicated that there was a more complex relationship among these factors. The three-way interaction was explored by examining the Occupation Stereotype x Goal Affordance effect in separate ANOVAs for men and women. The Occupation Stereotype x Goal Affordance interaction was significant for women, $F(2, 86) = 6.10$, $p = .003$, $\eta_p^2 = .126$, but not for men. For women, jobs that afforded salary goals were rated more favorably than those that afforded helping goals for both masculine- and feminine-stereotyped jobs, p 's $\leq .008$, .001, d 's = .44, .71, respectively (Means are presented in Table 3). The difference noted earlier between the salary and family goal affordance jobs was only significant for the masculine-stereotyped jobs, $p < .001$, $d = .50$, with masculine-salary jobs receiving higher ratings than masculine-family-friendly jobs (Table 3). Furthermore for women, feminine-family-friendly jobs were rated more favorably than feminine-helping jobs $p < .001$, $d = .59$, but this difference was not significant for masculine jobs. Additional comparisons between masculine and feminine jobs for each goal condition revealed that only the family-friendly jobs were significantly different, $p < .01$, $d = .44$, with feminine jobs rated higher than masculine jobs. To summarize, for women the goal affordance and gender stereotype of an occupation interacted to affect their preference ratings, but for men only the occupation stereotype significantly influenced their preferences.

Time 2

The three way interaction was again significant at Time 2, $F(2, 197) = 4.39$, $p = .014$, $\eta_p^2 = .043$, and was decomposed by examining the Occupation Stereotype (2) x Goal Affordance (3) effect separately for men and women. Similar to Time 1, the Occupation Stereotype x Goal Affordance interaction was significant for women, $F(2, 101) = 12.56$, $p < .001$, $\eta_p^2 = .199$, but not for men. (Means are presented in Table 4.) Simple effect analyses indicated that for both masculine- and feminine-stereotyped jobs, women rated jobs that afforded salary goals higher than those that

afforded helping goals, p 's = .053, .004, d 's = .32, .41, respectively, similar to Time 1. Jobs that afforded salary goals were rated higher by women than those that afforded family-friendly goals for masculine jobs, $p < .001$, $d = .64$, but not feminine jobs, replicating the Time 1 finding. Also similar to Time 1, feminine-family-friendly jobs were rated higher than feminine-helping jobs, $p = .001$, $d = .43$. Different from Time 1, women rated masculine-helping jobs higher than masculine-family-friendly, $p = .021$, $d = .34$. Additional comparisons between masculine and feminine jobs for each goal condition revealed that only the family-friendly jobs were significantly different from each other, $p < .001$, with feminine jobs rated higher than masculine jobs, comparable to what was found at Time 1, $d = .95$. Thus, for women the preference for feminine-stereotyped occupations over masculine-stereotyped occupations was primarily due to differences in the family-friendly goal condition. To summarize, similar to Time 1, job stereotype and goal affordance significantly interacted to affect women's ratings, but not men's, only partially supporting the hypothesis.

Discussion

Previous research has characterized gender differences in career paths as being due to the gender stereotype of occupations and differences in the values that men and women place on family, helping, and career achievement (Ceci et al. 2009; Hakim 2006). An important contribution of this study is that it examined these two factors in a single study so that their relative importance could be assessed. This addresses an important practical question as to whether masculine occupations could be made more attractive to women if they were made less masculine and shown to afford communal goals (Cheryan 2012; Diekmann and Steinberg 2013), and similarly if feminine occupations could be made more attractive to men by comparable manipulations. Furthermore, a strength of the study is that data collection was repeated over the course of an academic year, allowing the reliability of the results to be demonstrated.

The first hypothesis concerned the effects of occupation gender stereotypes on occupation preferences. The results suggest that compared to men, women may be less influenced by gender stereotypes. Although women expressed greater interest in feminine-stereotyped occupations than men, women did not generally differentiate between masculine and feminine occupations in their own job preference ratings to the same degree as men. The exception is that at both time points women exhibited a preference for feminine-family-friendly over masculine-family-friendly occupations. It is not clear why this preference was only found for the family-friendly goal condition, and this issue is discussed further below. Women in this sample who were recruited from introductory

level STEM courses, may have been less affected by occupation gender stereotypes because they likely perceived themselves to hold some of the stereotypical masculine cognitive and personality attributes that are associated with masculine jobs (e.g., analytical thinking, assertiveness; cf. Cheryan et al. 2013). Men, on the other hand showed a reliable preference for masculine occupations. This leads to the conclusion that occupation gender stereotypes may play a greater role in men's career decisions than women's.

This hypothesis is supported by other research suggesting that the pressure to conform to gender role norms is greater for men than women (Forsman and Barth 2012; Jacobs 1993). For example, previous research (Forsman and Barth 2012) found that jobs with descriptions including masculine skills (e.g., requiring leadership or analytical skills) were rated lower by male college students when a feminine job title accompanied the description. However, women's interest was the same across the job descriptions, regardless of the presence of a feminine title.

Why might men be more negatively biased against feminine careers than women are against masculine careers? Jacobs (1993) proposes that among other reasons, men are not heavily drawn to female-dominated careers because the prestige and pay are often less than they can find elsewhere. This proposition is not supported by this study's findings because men on average did not prefer higher paying feminine jobs over lower paying masculine ones. Even within the masculine occupations, preference ratings were not greater for higher paying masculine jobs than masculine helping or family-friendly jobs. Alternatively, men may believe that they simply do not have the necessary skills or personality characteristics to succeed in feminine occupations that typically also require feminine-stereotyped attributes such as gentleness, nurturance, and creativity (Eagly 1987). This is similar to the proposition from Precluded Interest Theory (Cheryan and Plaut 2010) that a person's perception of similarity to the prototypical person holding a job affects career interest. A third possibility is that men may be concerned that others will perceive them as deficient if they show interest in feminine occupations (Heikes 1991). For example, male nurses have reported that they are often reminded by patients, family, and colleagues that they are different from most men (Evans and Frank 2003). Given this study's results, the latter two explanations are the most viable and deserve scrutiny in future research.

Our second hypothesis concerned gender differences related to occupation goal affordance. In contrast to men, women's preference ratings were more influenced by the job's goal affordance. Interestingly, counter to predictions, occupations with family-friendly policies and helping orientations were not rated more favorably by women than higher salary jobs. For both masculine and feminine occupations, better salaried

jobs received higher ratings than helping jobs. Family-friendly occupations were rated similarly to higher salary occupations, only in the feminine-stereotyped conditions. These findings runs contrary to prevailing wisdom (e.g., Diekmann et al. 2011, 2010; Diekmann and Steinberg 2013), and suggest that emphasizing prosocial goals and family-friendly policies may not be a reliable strategy for attracting women to masculine dominated fields, at least during the early college years.

How can the differences in the current findings concerning communal goals be reconciled with other research? The manipulation of communal and agentic goal affordance is somewhat different in this study than in other research on Role Congruity Theory and Precluded Interest Theory. For example, Diekmann et al. (2010) measured whether students perceived occupations as affording intimacy, affiliation, and altruism for communal goals and power, achievement, and "seeking new experiences for excitement" (p. 1053) for agentic goals. Diekmann et al. (2011) manipulated communal aspects of a scientific work by emphasizing that the work was either highly collaborative or highly independent. This study focused on helping, family-friendly work hours, and salary because these are highly salient work characteristics, and they have received a great deal of attention in the literature. For example, Ceci et al. (2009) conclude that career-family trade-offs are the primary factor affecting women's representation in STEM fields, and Ferriman et al. (2009) report robust gender differences in the importance of salary for career decisions. However, these three characteristics only represent a few of the many possible communal and agentic goals that might affect students' career decisions. Thus, a challenge for Role Congruity Theory is to consider factors that might explain discrepant findings related to gender differences in the value of goal affordances, such as the ones in this study and others (e.g., Barth and the Alabama STEM Education Research Team 2013; Roberts and Robins 2000). We offer two possible factors.

First, little attention has been given to the lifespan developmental issues with respect to life goals. A developmental perspective takes into account that young adults will value different career outcomes depending on when they negotiate important milestones related to education, relationships, and starting a family (Ferriman et al. 2009). Consequently, the life goals associated with entering a field may be different than those related to retention in a field. For example, one possible reason salary may be very important for women during the early college years is because of the high cost of college education, and the importance of family-friendly jobs may increase as women grow closer to the typical age at which young women have their first child. It should be noted that most claims about the derailing effects of child rearing for

women's careers (e.g., Ceci et al. 2009; Hakim 2006) have focused on women after they have left college and entered (and dropped away from) the workforce. These are just some possible examples of why priorities might change over the college years. For educators looking to increase the number of women in STEM areas, there needs to be a clearer understanding of life goal factors starting at earlier stages of education and through the college years.

A second factor that can explain the discrepancy between the current findings for women and other studies is that in this sample all of the women qualified academically for being in a course required for a STEM major, including Chemistry, Physics, Mathematics, Geology, Engineering and other STEM fields that require courses in these fields. These women may have already considered some of the disadvantages for a woman holding a masculine occupation or major and persevered anyway. Consequently, their career goals may be more agentic than other women and girls who have yet to enroll in college or commit to a STEM major. Other research has found that women at the early stages of a STEM major value career success more than other life goals (Barth et al. 2010; Barth and the Alabama STEM Education Research Team 2013). To summarize, these findings do not so much contradict Role Congruity Theory, as they underscore that there is considerable variation in women's endorsement of traditional gender roles, some of which may be associated with major choices and lifespan developmental stage.

The third hypothesis concerned the interactive effects of gender, occupation stereotypes, and goal affordance. The interplay of these factors was greatest for women, although these effects were smaller in magnitude than those previously discussed. Findings did not support the hypothesis that women would be more interested in masculine occupations if they afforded communal goals. Instead, women's preference ratings were the greatest for occupations with higher salaries and those that were feminine and family-friendly. It is interesting that the young college women in this study gave feminine family-friendly occupations higher ratings than masculine family-friendly occupations, but there were no differences between masculine and feminine jobs for helping goals. Thus, women's biases against masculine occupations might depend on the goal affordances of the occupations, but an explanation that relies on communal versus agentic goal affordances cannot fully explain the current findings. A simple explanation is not readily apparent within the confines of this study, but it deserves further investigation.

As noted earlier, there has been little systematic work examining the hypothesis that college women would be more favorably disposed toward masculine occupations if they were more compatible with achieving other traditionally feminine life goals and even less on the comparable hypothesis for men. Factors related to developmental timing and academic aptitude discussed previously apply here as well. For example,

in another study it was found that across a wide range of grades, including college, students predict that hypothetical students would be more interested in occupations that match their abilities rather than their gender stereotype (Barth et al. 2015; Eno et al. 2010).

Comparison of Findings Across Time Points

It is important to emphasize that a strength of this study is that the key findings were replicated over an academic year. This is valuable given the concern about the reliability of psychological studies (The Open Science Collaboration 2012). It is expected that the findings concerning men's preference for masculine-stereotyped occupations and women's interest in high salaried occupations would be upheld in studies with similar samples. Furthermore, because both the sample and the instrument (Life Goals and Gender Stereotypes) differ from those of previous studies, it is valuable to show some evidence that findings are reliable.

Although the findings at each time point were very similar, there were two notable differences that have not yet been discussed. First, at Time 2 only, men rated occupations that afforded family goals higher than those that afforded salary goals. By itself, this finding is consistent with some previous research (Barth et al. 2010) showing that men in some STEM majors place a greater value on relationship goals than salary goals. However, it is not clear why this difference did not emerge at Time 1. The findings suggest that there is instability in the value than men in STEM fields place on family relative to salary occupation goal affordances, and future research might examine why this is the case. It would be interesting to see if the relative value of family and income goals generally shifts over the college years for men in STEM fields.

A second difference across the two time points was that women rated masculine-help jobs higher than masculine-family-friendly jobs at only Time 2. This finding is interesting because the relationship between these two communal goal affordances is reversed for feminine-stereotyped occupations (i.e., family-friendly > help), which was evident at each time point. Few studies have examined the relative importance that women place on family versus helping goals; however, Barth and the Alabama STEM Education Research Team (2013) did not find a difference in the value women in STEM majors generally placed on these goals. Some have suggested that women are more interested in science fields when the occupation is associated with helping people (Ceci and Williams 2011; Thom 2001). Thus, this finding deserves further study, perhaps in a truly longitudinal study covering all of the college years.

Despite these differences, the broader conclusions related to the three hypotheses were generally supported at each time point. It is important to note that in this study the majority of

Time 2 participants had also participated at Time 1. Thus, the replication presented here does not provide the same level of proof of reliability as would a study on an independent sample. Thus, the next step in assessing the scientific soundness of these conclusions is for an independent research lab to attempt to replicate these findings (The Open Science Collaboration 2012).

Implications

The practical implications of this study are two-fold. First, the larger society's cultural expectations for traditional gender roles may have less of an impact on women than men in some circumstances. The results of this study indicate that women who are enrolled in STEM college courses are probably not discouraged from specific careers simply because of masculine stereotypes. In contrast, men in STEM college courses are less interested in occupations that are stereotypically feminine, consistent with Precluded Interest Theory and Role Congruity Theory.

Second, these results also indicate that women might not be concerned about having a prosocially-oriented or family-friendly career as previously thought, at least during the early years of college education. Instead, salary may be a salient factor at this time. Later in college women might become disenchanted with traditionally masculine STEM career paths because they believe they will be underpaid relative to men, or perhaps because they are not aggressively recruited for post-graduation employment at the same rate as their male peers. As noted earlier, the importance of different life goals might also shift over the emerging adulthood years.

Limitations

The sample of STEM students is both a strength and a limitation of the study, as has been discussed above. So, one open question is whether the results of this study can be generalized to the broader college population and to people at different points in the lifespan (e.g., middle school and high school students or people in mid-adulthood). For instance, men majoring in social work may not base career choice on occupation stereotypes and may instead evaluate occupations and occupational goals differently. It is also possible that women who value salary as an occupational goal self-select into STEM disciplines, and women in other disciplines place greater importance on helping and family-friendly policies when considering a career. As noted earlier, the sampling for this study might have also resulted in more favorable attitudes toward masculine jobs than women who typically populate Psychology 101 subject pools, which have been used in many gender role-life goal studies (e.g., Cheryan et al. 2012, 2013, Diekmann et al. 2010, 2011). This points to the need to study young college students across a range of disciplines and stages in their college programs.

This study was designed to systematically investigate the relative importance of stereotypes and goal affordances. In the real world career decisions take into account multiple factors including multiple occupation goal affordances. For example, one potential job may have a higher salary than another, but may require moving to a new location, away from a romantic partner. In this scenario, the relative importance the romantic relationship relative to monetary gain must be weighed. Examining how these sorts of trade-offs affect career choices would further contribute to Role Congruity Theory and add to the understanding of how goal affordances influence career decisions.

Finally, the method that was employed to manipulate occupation stereotypes and goal affordances was brief, and there were only a few items in each of the six conditions. The small number of items could potentially threaten the validity of assessment. Given the practical constraints of conducting the study during class time and with multiple age groups (for the larger study), an approach was needed that was time efficient, but was effective at manipulating stereotypes and goal affordances. Unintentionally, some occupations may have had attributes that systematically affected participants' responses, undermining the measurement of the constructs. To this end, the manipulation of the goal affordances was made salient by having salaries and work conditions clearly labeled. The job titles and descriptions also clearly identified the occupations as helping careers. Since this is a within subjects design, individual difference factors were controlled for across the conditions. The six occupation type measures were highly correlated over time, both in this sample and with the younger sample in the larger study. Moreover, these manipulations produced reliable results over time, a necessary component of validity. Finally, the findings for gender stereotypes are consistent with previous research findings outside of the authors' lab (e.g., Cheryan et al. 2013; Jacobs 1993). Together, these factors provide confidence in the experimental approach taken in this study. Nevertheless, future studies could improve upon the method by expanding the number of items for each job type.

In conclusion, this study contributes to the understanding of how occupation stereotypes and occupation goal affordances influence career decisions. The findings that women would show the greatest preference for occupations with higher salaries and that men would base their decisions primarily on the occupation stereotype were unexpected. Theorizing concerning gender roles, life goals, and gender stereotypes can be further refined by examining factors such as academic abilities and developmental timing. This study suggests that both will play an important role in explaining gender differences in career decisions.

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Appendix

Life Goals and Gender Stereotypes Instrument

Directions: For each question below two occupations are described. A description of the occupation, *Starting salary*, *Work conditions*, and *Education* level are given. If YOU had to choose one of the occupations to hold for yourself, which one would it be? Use the rating scales on the answer sheet to tell us which occupation you would prefer the most. **Be sure to read each description before choosing.**

[*Note.* Participants indicated which job they preferred (Job A or Job B) on a 4-point scale (1 = Definitely Job A, 2 = Probably Job A, 3 = Probably Job B, 4 = Definitely Job B. The actual job titles were filled in for A and B.)]

1. **A. Paramedic—Help people in emergency situations when they are seriously injured or ill.**

Starting salary: Good

Work conditions: 40 hours per week, so there is an average amount of time for being with family

Education: 1 year of training after high school

OR

B. Jewelry designer— Make unique, attractive, jewelry to sell in shops.

Starting salary: Good.

Work conditions: 40 hours per week, so the amount of time from family is average.

Education: 1 year of training after high school.

2. **A. Computer Programmer— Improve how a computer program works.**

Starting salary: Excellent

Work conditions: A lot of time to spend time with family because often you can set your own work schedule and can work from home.

Education: 4 years of college required

OR

B. Fashion Editor for a woman’s magazine— Create an attractive magazine that sells a lot of copies.

Starting salary: Excellent

Work conditions: Pretty rigid work schedule, may have trouble getting time off for family.

Education: 4 years of college required

3. **A. Caterer— Prepare meals or refreshments for special occasions such a weddings and business lunches.**

Starting salary: Average

Work conditions: You decide when and where you work, allows a lot of time for raising family.

Education: 2 years of training after high school

OR

B. Butcher —Prepare meat for grocery stores to sell or restaurants to cook.

Starting salary: Average

Work conditions: Must often work on weekends and evenings, it is sometimes hard to find time to be with family.

Education: 2 years of training after high school

4. **A. Teaching Consultant— Provide information to schools & teachers so that they can better educate children.**

Starting salary: Very Good

Work conditions: Typical work week is 40 hours.

Education: 4 years of college

OR

B. Athletic trainer— Provide exercises and work-out plans to athletes so they can perform better.

Starting salary: Average

Work conditions: Usually work 40 hours per week.

Education: 4 years of college

5. **A. Landscaper— Plant and maintain trees, bushes, and other plants around a house or business.**

Starting salary: Good

Work conditions: Typical work week is 40 hours per week.

Education: 4 years of college

OR**B. Teacher— Teach children and help them learn.***Starting salary:* Good*Work conditions:* 40 hours per week, so the amount of time for family is average.*Education:* 4 years of college**6. A. Home Decorator— Pick furniture, paint, and other home decorations to make homes attractive.***Starting salary:* Average*Work conditions:* Typical work week is 40 hours per week.*Education:* 4 years of college**OR****B. Architect— Design homes and buildings.***Starting salary:* Very good*Work conditions:* Typical work week is 40 hours.*Education:* 4 years of college**7. A. Shopping Network Hostess— Sell products such as jewelry and women’s clothing on a television show.***Starting salary:* Excellent*Work conditions:* Regular work schedule is 40 hours per week.*Education:* 4 years of college**OR****B. Bio-Medical Engineer— Create artificial arms & legs that move like real ones for people who have lost a limb.***Starting salary:* Excellent*Work conditions:* Regular work schedule is 40 hours per week.*Education:* 4 years of college**8. A. Buyer for a Chain of Clothing Stores— Buy a line of clothes from fashion designers that will be sold in stores all over the country.***Starting salary:* Very good*Work conditions:* Must travel a lot and so you spend a lot of time away from their families.*Education:* 4 years of college**OR****B. Accountant for an International Corporation— Keep track of the money that an international company makes and spends in different parts of the world.***Starting salary:* Very good*Work conditions:* Often work online from home and so they have plenty of time for their family.*Education:* 4 years of college**9. A. Computer Technician—Install hardware & software on computers, repair computers when they fail.***Starting salary:* Good*Work conditions:* Work some weekends to repair computers, sometimes interferes with family activities.*Education:* 4 years of college**OR****B. Librarian—Select books for libraries, work with customers to find books, information or do research.***Starting salary:* Good*Work conditions:* Can choose to work days or evenings, schedule is flexible to allow for family time.*Education:* 4 years of college**10. A. Forest Ranger—Manage the wooded areas of national parks and forests to make sure that trees and natural areas are healthy.***Starting salary:* Average*Work conditions:* Regular schedule of 40 hours per week.*Education:* 4 years of training after high school**OR****B. Interior Designer—Create attractive office and home designs that can be sold to customers.***Starting salary:* Excellent.*Work conditions:* Interior designers keep a regular work schedule of 40 hours per week.*Education:* 4 years of training after high school.

11. A. Dietician—Help people change their eating habits because they are sick, need to lose weight, or need to improve their health.

Starting salary: Average

Work conditions: Regular schedule of 40 hours per week.

Education: 2 years of Education after high school

OR

B. Real Estate Appraiser— Determine how much a home, business, or property is worth.

Starting salary: Average

Work conditions: Regular schedule of 40 hours per week.

Education: 2 years of Education after high school

12. A. Chiropractor—Provide treatment for people who have hurt their back or neck in an accident or at work.

Starting salary: Excellent

Work conditions: Regular 40 hours/week, sometimes get called in for emergencies in the evenings or weekends.

Education: 3 years of training after high school

OR

B. Nurse—Assist doctors in providing treatment for patients who are sick or need help.

Starting salary: Average

Work conditions: 40 hours per week, sometimes work on weekends or evenings if an emergency comes up.

Education: 3 years training after high school

13. A. Firefighter— Save buildings and people from fires.

Starting salary: Average

Work conditions: 40 hours a week, but sometimes they work week ends and nights.

Education: 1 year of training after high school

OR

B. Secretary—Keep track of appointments; take notes at meetings so that a business can run smoothly.

Starting salary: Average.

Work conditions: 40 hours per week, but when bosses work weekends and evenings you often have to work as well.

Education: 1 year of training after high school

14. A. House Carpenter— Build the doors, cabinets and other things made of wood for a new house.

Starting salary: Average

Work conditions: Usually get to decide when and where they work, schedules allow a lot of time for raising a family.

Education: 2 years of training after high school

OR

B. Florist— Make attractive flower arrangements for hotels, businesses and special occasions like weddings.

Starting salary: Average

Work conditions: Often work on weekends and evenings, it is sometimes hard to find time to be with family.

Education: 2 years of training after high school

15. A. Fashion Designer—Create new styles of clothes to sell in stores.

Starting salary: Excellent

Work conditions: Can work in a studio or at home and can work evenings or days; can be near their family.

Education: 4 years of college

OR

B. Stock Broker— Buy and sell stocks in companies to make a large profit.

Starting salary: Excellent

Work conditions: Often have to work long hours during the week; meet with customers in the evening, hard to find time to be with family.

Education: 4 years of college

16. A. Make-Up Artist— Select makeup for models, actors and movie stars when they are performing.

Starting salary: Very good

Work conditions: Regular 40 hours each week.

Education: 1 year of training after high school

OR

B. Delivery Truck Driver— Deliver packages and letters to people and businesses.

Starting salary: Average

Work conditions: Delivery truck drivers work a regular 40 hours each week.

Education: 1 year of training after high school

17. A. Aeronautical Engineer— Design new planes, helicopters and spaceships that can go further and faster than old ones.

Starting salary: Excellent

Work conditions: Regular 40 hours each week.

Education: 6 years of college

OR

B. Marriage and Family Counselor— Help people who are having trouble with their husbands, wives or children

Starting salary: Excellent

Work conditions: Regular 40 hours each week

Education: 6 years of college

18. A. Bank Manager— Take care of the money the bank invests so that the bank makes money.

Starting salary: Very good

Work conditions: 40 hours a week.

Education: 4 years of college after high school

OR

B. Bookkeeper — Keep track of the money for small businesses that they keep track of profits and expenses.

Starting salary: Average

Work conditions: 40 hours a week, following normal business hours.

Education: 4 years of college after high school.

Scales

Scales were created by averaging the ratings for the items on the scale. R indicates that an item is reversed scored.

Masculine Helping: 1R 7, 13R

Masculine Family-Friendly: 2R, 8, 14

Masculine Salary; 6, 12R, 18R

Feminine Helping: 5, 11R, 17

Feminine Family-Friendly: 3R, 9, 15R

Feminine Salary; 4R, 10, 16R

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