Evidence for the Social Role Theory of Stereotype Content: Observations of Groups' Roles Shape Stereotypes

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In applying social role theory to account for the content of a wide range of stereotypes, this research tests the proposition that observations of groups' roles determine stereotype content (Eagly & Wood, 2012). In a novel test of how stereotypes can develop from observations, preliminary research collected participants' beliefs about the occupational roles (e.g., lawyer, teacher, fast food worker, chief executive officer, store clerk, manager) in which members of social groups (e.g., Black women, Hispanics, White men, the rich, senior citizens, high school dropouts) are overrepresented relative to their numbers in the general population. These beliefs about groups' typical occupational roles proved to be generally accurate when evaluated in relation to data from the Bureau of Labor Statistics. Then, correlational studies predicted participants' stereotypes of social groups from the attributes ascribed to group members' typical occupational roles (Studies 1a, 1b, and 1c), the behaviors associated with those roles (Study 2), and the occupational interest profile of the roles (Study 3). As predicted by social role theory, beliefs about the attributes of groups' typical roles were strongly related to group stereotypes on both communion and agency/competence. In addition, an experimental study (Study 4) demonstrated that when social groups were described with changes to their typical social roles in the future, their projected stereotypes were more influenced by these future roles than by their current group stereotypes, thus supporting social role theory's predictions about stereotype change. Discussion considers the implications of these findings for stereotype change and the relation of social role theory to other theories of stereotype content.

Keywords: stereotypes, social roles, stereotype accuracy, stereotype change

If people based their actions on stereotypes, they would ask a woman for help with their troubled emotional relationships but a man for help in confronting an obnoxious employer. Such stereotypes provide quick and easy assumptions that affect behavior toward members of social groups (Schneider, 2004; Yzerbyt & Demoulin, 2010). Although common sense indicates that the stereotypes of men and women could not be easily exchanged, such insights do not explain the sources of these stereotypes' content. What information leads social perceivers to ascribe particular attributes to social groups? This article explores a social role theory explanation of the content of stereotypes.

Our research breaks new ground even though social role theory is well known. The theory's visibility in relation to stereotyping is almost exclusively as an explanation of gender stereotypes, consistent with its early presentation in a gender context (Eagly & Steffen, 1984). For example, Fiske, Cuddy, Glick, and Xu (2002, p. 882) characterized it as the "social role theory of gender stereotypes." Moreover, the theory's validity even for gender stereotypes has been questioned. In particular, one critique is that substantial changes have occurred in women's roles without changes in gender stereotypes, presumably refuting the theory (Rudman, Moss-Racusin, Glick, & Phelan, 2012, p. 177). Given these considerations, the main purposes of this article are twofold: (a) to establish the validity of social role theory as a general theory of the stereotypes of social groups, and (b) to advance thinking about stereotype change, including correcting the misunderstanding that social role theory predicts that all changes in groups' roles would change their stereotypes.

Social role theory postulates that social perceivers' beliefs about social groups in their society derive from their experiences with group members in their typical social roles—that is, in roles in

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which these group members are overrepresented relative to their numbers in the general population (Eagly, 1987; Eagly & Wood, 2012; Wood & Eagly, 2012). The behaviors enacted within these roles influence the traits that perceivers assume are characteristic of the group, a process enabled by correspondent inference (Gawronski, 2003; Gilbert, 1998). For example, when women, more often than men, are observed in paid and unpaid roles that involve caring for children, perceivers assume that women possess communal traits, such as social sensitivity, warmth, and nurturance, which are thought to enable the behaviors required by these roles. In essence, social perceivers observe that members of a group occupy certain social roles relatively more than members of other groups do. Perceivers' correspondent inferences from group members' behaviors in their typical roles generalize to the entire group, and group stereotypes are born.

These social role predictions distinguish between social groups and their specific roles. This distinction follows from the breadth of the settings within which roles and groups are influential. A *role* is a set of expectations associated with a particular social position in a specific type of setting (Biddle, 1979; Staines, 1986). A school teacher, for example, has extensive obligations within a school setting but minimal obligations as a teacher when visiting another city. In contrast, membership in a social *group* based on demographic variables such as age, race, or gender has trans-situational influence. A man, for example, has obligations based on being male in all settings in which his gender is identified. This distinction between roles and groups resembles the distinction in expectation states theory between *specific status characteristics*, which operate in a circumscribed range of settings, and *diffuse status characteristics*, which operate trans-situationally (Correll & Ridgeway, 2003; Ridgeway, 2011).

When forming stereotypes, social perceivers weight most heavily those behaviors that they perceive as typical of a group (see also Tajfel, 1981). Because most behaviors are organized into social roles in daily life, social role theory emphasizes typicality of groups' roles, which is defined by group members being observed to occupy them in disproportional numbers, compared with the group's representation in society as a whole. From this perspective, occupational roles, broadly conceived to include paid and unpaid work, are particularly influential. Whereas other types of roles (e.g., familial, friendship) have similar occupancies across most social groups, occupational roles seldom represent groups equally (see U.S. Department of Labor, Bureau of Labor Statistics, 2013a). For example, Hispanics are common in lawn service roles, senior citizens in store clerk and volunteer roles, and high school dropouts in food service and fast food roles. In addition, occupational roles are described by extensive government data on role characteristics and role occupancies (e.g., from U.S. Bureau of Labor Statistics), which facilitated our testing of social role theory. Therefore, we have chosen to test social role theory in relation to the specific domain of occupational roles although social role predictions should also be valid in relation to other roles disproportionally occupied by members of social groups.

Although there are several theories of stereotype content (e.g., Alexander, Brewer, & Herrmann, 1999; Fiske et al., 2002), we favor social role theory as providing the most plausible account of the psychological processes underlying stereotyping because it focuses on the directly observable behaviors of group members. Social perceivers observe these behaviors in the context of social roles because social life is organized by occupational, family, friendship, leisure, and other roles, each of which is associated with certain types of behaviors. In comparison, other theories invoke features of social structure such as status and interdependence as the main sources of stereotypes (Alexander et al., 1999; Fiske et al., 2002). Yet, such information is not necessarily discernible from behavior but instead requires that perceivers have acquired considerable knowledge about intergroup relations. Although social structural information is correlated with group stereotypes, it is unlikely to provide the basic observations from which social perceivers construct these stereotypes. The ease with which even young children acquire stereotypes (e.g., Martin & Ruble, 2010) suggests that simpler processes involving categorization by roles and groups and inferences from behaviors to traits can account for stereotyping. As our research seeks to demonstrate, the everyday activities (observed directly or indirectly through media) that are performed by members of social groups to carry out their social roles provide most of the information that social perceivers readily notice and use to create group stereotypes.

Past research on social role theory is limited in scope because it has addressed mainly stereotypes based on gender (Diekman & Eagly, 2000; Eagly & Steffen, 1984, 1986; see also Yount, 1986), with rare applications to other stereotypes (age, Kite, 1996; income, Johannesen-Schmidt & Eagly, 2002). The current study addressed stereotypes based not only on gender, age, and income, but also on race/ethnicity, sexual orientation, education level, and political parties, all in the same design. Another limitation of past research is inherent in its usual designs, which relied on portraying social groups with and without information about their roles (e.g., Eagly & Steffen, 1984). Because critics have raised questions about whether this role information affects judgment standards and thus compromises these demonstrations (see Bosak, Sczesny, & Eagly, 2012), a more convincing design would compare perceptions of groups and their typical roles. Our research takes this approach and thus provides a direct and strong test of the central claim of social role theory—that group stereotypes for a wide range of groups correspond closely to stereotypes of the specific social roles in which group members are perceived as overrepresented.

To the extent that stereotypes are derived from observations of group members' behavior, stereotypes would also have substantial group-level accuracy. In fact, stereotypes have been shown to be moderately to highly accurate in relation to the attributes of many commonly observed social groups within cultures (e.g., Chan et al., 2012; Diekman, Eagly, & Kulesa, 2002; Hall & Carter, 1999; Halpern, Straight, & Stephenson, 2011; Jussim, 2005, 2012; Rogers & Wood, 2010; Ryan, 2002; Swim, 1994; but see Terracciano et al., 2005). Evidence of accuracy suggests that stereotypes reflect social reality (Jussim, Cain, Crawford, Harber, & Cohen, 2009) even though they produce biased judgments of atypical individuals, who may be assimilated to or contrasted from their group stereotypes (Biernat, 2003, 2005; von Hippel, Sekaquaptewa, & Vargas, 1995). According to social role theory, the key aspect of the social reality represented in group stereotypes is the typical roles occupied by members of a group. In a strong test of this theory, the current research also tests the proposition that the roles that perceivers believe are associated with particular groups are

generally accurate representations of role occupancy, on which stereotypes are then based. Of course, even though stereotypes can be generally accurate when based on observed role distributions, neither these distributions nor the stereotypical traits inferred from them provide evidence of the nature or nurture causes of group differences (cf. Eagly & Wood, 2013).

The first studies that we report in this article related stereotypes of a large number of social groups to the averaged attributes of their typical occupational roles. This design requires that we (a) determine the occupational roles believed to be typical for social groups and assess the accuracy of these beliefs (Preliminary Study), and (b) separately assess stereotypes of groups and attributes of roles and relate the group stereotypes to the average attributes of the roles considered most typical of each group (Studies 1a, 1b, and 1c; Study 2; Study 3). A separate study experimentally manipulated these typical roles to assess how expected changes in group members' typical roles produce anticipated change in their stereotypes (Study 4). In most of our analyses, collectives in the form of groups and roles form the units of analysis rather than individual participants, consistent with our stance that group stereotypes are consensual, cultural entities. As in much cross-cultural research (e.g., Nosek et al., 2009; Zentner & Mitura, 2012) as well as some research on stereotypes (e.g., Hall & Carter, 1999), data from various sources are aggregated to the collective level and then statistically analyzed.

Preliminary Study

Our first steps were to determine the occupational roles in which group members are regarded as overrepresented and to show that they are plausibly based on valid observations and not on mere guesses created by groups' stereotypes. Suggesting accuracy, and consistent with research on stereotype accuracy in general (e.g., Jussim, 2005, 2012; Ryan, 2002), past research has shown that estimates of the sex distributions of various occupations correlated highly with their actual sex distributions, $r(78) = .93$, $p < .001$ (Cejka & Eagly, 1999). Nonetheless, it is important to test the accuracy of perceptions of the typical roles occupied by a wide range of groups. We thus determined groups' typical social roles by asking participants to list occupational roles for a variety of groups and then examined the accuracy of these typical roles by relating them to U.S. Bureau of Labor Statistics (BLS) occupational data.

Selection of Typical Roles

Participants. Two pretest samples consisted of 313 community members (62.5% women; mean age of 36.47 years with a *SD* of 14.21; 64.8% European American, 14.5% African American, 5.2% Hispanic, 4.7% Asian American, and 10.8% other or unreported) and 257 students from a Midwestern university (53.1% women; mean age of 20.43 years with a *SD* of 2.59; 64.6% European American, 17.3% Asian American, 6.3% African American, 4.3% Hispanic, and 7.5% other or unreported). The community sample was recruited from public settings (e.g., parks, festivals, food courts) in Chicago and the surrounding area. Surveyors asked every third person or group of people who appeared to be at least 18 years old to complete a short questionnaire. The student sample was recruited from public settings on campus. These two samples were used to procure the typical roles for Study 1a and 1b. In addition, because our main hypotheses were also tested at a West Coast university (in Study 1c), another 58 students (65.5% women; mean age of 19.81 years with a *SD* of 3.55; 79.3% were European American, 10.3% Hispanic, 3.4% Asian American, and 6.9% other or unreported) from this university completed the same task to check that the groups were similarly associated with roles in this second location.

Procedure. Participants were instructed to name three occupations that they had observed as disproportionately and frequently held by members of the given group, including illegitimate occupations such as prostitution, informal occupations such as volunteering, and non-occupations such as unemployment. The task was framed as a study of the accuracy of participants' knowledge of how occupational roles vary across groups compared to census data. In total, 45 groups were selected to represent a wide variety of distinctions of gender, race, ethnicity, sexual orientation, religion, age, education level, socioeconomic status, and political orientation. We used the categories of Black men, Black women, White men, and White women because stereotypes of intersecting categories often differ from those of gender or race alone (see Ghavami & Peplau, 2013; Niemann, Jennings, Rozelle, Baxter, & Sullivan, 1994). Yet, to keep the number of groups manageable, the other groups were not separated by gender. Each community participant performed the role naming task for 2 groups, and each student participant for 2–15 groups.

Results. Two persons coded each of the roles generated by participants into 1 of 114 occupations (e.g., car salesman, librarian, nurse, truck driver) with 91.9% and 91.7% agreement for the two main community and Midwest student samples, respectively. To select the groups and associated roles for the main studies, these codings were totaled to find groups associated with consensual roles. Within each of the two samples, any group was eliminated if it yielded one third or more of missing or uncodeable responses, if the most frequently listed role accumulated less than 10% of responses, or if the three top roles included fewer than 22% of all responses. These rules were slightly relaxed for Black women in the community sample and Black men in the Midwest student sample in order to retain them because they were parallel to the retained groups of White men and White women. Across the groups selected in each sample, the first, second, and third most common occupational roles were mentioned on average by 48.6%, 38.3%, and 29.2% of the participants in the community sample, respectively, and 52.2%, 39.1%, and 31.7% of participants in the Midwest student sample (participants each mentioned 3 roles, so percentages can add to over 100). The West Coast university sample confirmed a similar set of roles as the Midwest sample (the two top roles were the same for 19 of the 22 groups selected for use in the main study, although in 10 of these cases the order of the top and second role was reversed; in the 3 cases in which the roles did not match, we looked at the percentage of people in both samples who nominated each role and selected the most common across both samples), and thus Study 1c included students from both the Midwest and West Coast. From the original 45 groups, 26 of the groups exceeding these criteria were selected for the main study with the community sample (Study 1a) and 22 in each student sample (Studies 1b and 1c).

Although not all of our original 45 groups were identified as having consensual typical roles (e.g., lesbians, Democrats, femi-

nists, environmentalists, vegetarians, atheists, Muslims, physically handicapped), 84% of them did. This lack of consensual occupational roles for some groups may reflect participant individual differences in opportunities for direct and indirect observation of these groups. For example, some people may have few observations of vegetarians, and others have many. Other groups may be too broadly defined to produce clear stereotypes or beliefs about roles. For example, physically handicapped people may or may not be channeled into certain types of occupational roles, depending on the type and severity of their handicap. We consider in the General Discussion how stereotypes may be formed when role information is not easily observed.

For the main study, the design included (a) 26 groups and their 3 most commonly noted roles in Study 1a, (b) 22 groups and their 3 most commonly noted roles in Study 1b, and (c) 22 groups and their 2 most commonly noted roles in Study 1c. Some roles (e.g., lawyers) were associated with more than one group (e.g., the rich, conservatives). Table 1 lists the groups and corresponding roles for each study. For example, in Study 1a, the roles most commonly nominated as overrepresenting the group Asians were dry cleaner worker, doctor, and small business owner, and for the group White men were business professional, lawyer, and politician.

Accuracy Check

Method. We checked whether the groups were actually overrepresented in their consensually nominated roles based on data provided by the BLS for the representation of social groups within occupations in 2004 (the first year of data collection), albeit only for those groups for which BLS classifies people within occupations, including gender and race as well as some divisions by age, education, and socioeconomic status (J. Borbely, personal communication, October 28, 2011; U.S. Department of Labor, Bureau of Labor Statistics, 2005b). In total, 50% of the groups could be identified in the BLS data. The following social groups could be precisely identified: Asians, Black men, Black women, Hispanics, White women, and White men. Also precisely identifiable were the educational groups of high school dropouts, high school graduates, and people with a bachelor's degree. With some approximations, we also identified (a) the age groups of 20-somethings and middle-aged/baby boomers and (b) the income groups of poor, middle class, and upper middle class, which were guided by the Census Bureau definition of poverty (U.S. Department of Commerce, U.S. Census Bureau, n.d.) and the definition of the middle class used by economists (applied to the median personal income in 2004; Galston, 2013; U.S. Department of Labor, Bureau of Labor Statistics, 2005a).[1] In 5 cases, groups could not be represented by all of their typical roles for the accuracy check because one of their roles was not tracked by the BLS (i.e., Asians and the role small business owners, Black men and the role drug dealers, White women and the role homemakers, 20-somethings and the role students, and high school graduates and the role skilled manual laborers). The BLS does not classify individuals by religion, sexual orientation, or political ideology, so the typical roles of these groups could not be checked for accuracy.

To quantify the overrepresentation of each group for which data were available, we created a *group representation ratio*. This ratio was produced for each group by dividing its percentage in each typical role across all the samples by its percentage among all employed persons (according to the BLS data) and then averaging these ratios across each group's typical occupations. Group representation ratios above 1.00 indicate overrepresentation of the group as averaged across their typical occupations, and ratios below 1.00 indicate underrepresentation, compared to the group's representation in the overall labor force (see Table 2). For example, Hispanics are 43.8% of grounds maintenance workers, 22.2% of workers in food preparation and serving, and 40.8% of maids and housekeepers but only 14.3% of all employed persons. Thus, the average group representation ratio for Hispanics was 2.52.

Results. As shown in Table 2, no group had a mean ratio below 1.00. Across all groups, the mean group representation ratio was 1.93 ($SD = 0.77$), which was significantly higher than 1.00, $t(13) = 4.54$, $p = .001$. (Throughout this article, p-values of .05 or less were considered statistically significant.) This result demonstrates considerable accuracy in naming roles in which groups are overrepresented. Because our pretest participants merely nominated typical roles, our method does not allow us to determine how accurately they could estimate the magnitude of groups' overrepresentation. However, for our purposes this comparison of pretest participants' beliefs about groups' typical roles with objective BLS data on groups' representations in roles is critical; this test showed that participants nominated occupations in which group members are actually overrepresented. Thus, our role data, on the whole, reflect realistic observations of groups' typical occupational roles. In addition, these results add to past research demonstrating group-level stereotype accuracy (e.g., Jussim, 2005, 2012; Ryan, 2002) by showing that perceivers are generally accurate in identifying the typical occupational roles of many social groups.

Studies 1a, 1b, and 1c

To test the main predictions of social role theory—that stereotypes of groups correspond to the perceived attributes of their typical roles, both community (Study 1a) and student (Studies 1b and 1c) participants rated a variety of groups and the typical roles that were associated with each group (as determined by the Preliminary Study). Although the instructions were similar in each study, the number of groups and roles, the specific roles paired with each group, and the stereotypical traits used in the scales varied slightly across studies, and thus the data cannot be combined. At the level of the group (e.g., senior citizens, White women, high school dropouts), the ratings of the group stereotypes were correlated with the average ratings of each group's typical occupational roles. In support of social role theory, we expected groups' stereotypes to positively correlate with the perceived attributes of their corresponding social roles.

[1] Based on the categories available in the BLS data, 20-somethings were defined as a combination of the age ranges 20–24 and 25–35 and middle-aged/baby boomers were classified as a combination of the age ranges 45–54 and 55–64. Senior citizens were excluded from the accuracy check because 3 of their 4 typical roles listed by our participants were not categorized in the BLS (e.g., retired, volunteer, store greeter). We used the designation of under $300 a week ($15,600 a year) as poor (which accounts for 20% of workers), between $400 a week ($20,800 a year) and $1,200 a week ($62,400 a year) as middle class (which accounts for 55% of workers), and above $1,200 a week as upper-middle class (which accounts for 13% of workers).

Table 1
Preliminary Study: Groups and Their Typical Roles

Group	Study 1a (Community sample)	Study 1b (Student sample)	Study 1c (Student sample)
Arabs	small business owners	taxi drivers	small business owners
	store clerks or cashiers	small business owners	taxi drivers
	taxi drivers	computer scientists	
Asians	dry cleaner workers	doctors	doctors
	doctors	engineers	people in computer-related fields
	small business owners	small business owners	
Black men	professional athletes	professional athletes	professional athletes
	factory workers or laborers	drug dealers	drug dealers
	bus drivers	unemployed	
Black women	teachers	food service or fast food workers	teacher
	cleaning service workers	secretaries or office workers	food service or fast food workers
	secretaries or office workers	unemployed	
Gay men	hair stylists		fashion designers
	fashion designers		hair stylists
	interior decorators		
Hispanics	lawn maintenance workers/landscapers	food service or fast food workers	food service or fast food workers
	food service or fast food workers	lawn maintenance workers/landscapers	lawn maintenance workers or landscapers
	cleaning service workers	cleaning service workers	
Jews	lawyers	lawyers	lawyers
	doctors	bankers	bankers
	small business owners	doctors	
White men	business professionals	lawyers	lawyers
	lawyers	CEOs or corporate executives	CEOs or corporate executives
	politicians	doctors	
White women	teachers	teachers	teachers
	secretaries or office workers	homemakers	homemakers
	nurses	nurses	
Welfare recipients	food service or fast food workers	unemployed	unemployed
	unemployed	food service or fast food workers	food service or fast food workers
	factory workers or laborers	custodians or janitors	
The poor	food service or fast food workers	custodians or janitors	food service or fast food workers
	custodians or janitors	food service or fast food workers	custodians or janitors
	cleaning service workers	factory workers or laborers	
The middle class		teachers	teachers
		business professionals	business professionals
		middle-level managers	
The upper middle class	lawyers		
	doctors		
	upper-level managers		
The rich	lawyers	lawyers	
	CEOs or corporate executives	doctors	
	bankers	CEOs or corporate executives	
Millionaires	CEOs or corporate executives	CEOs or corporate executives	CEOs or corporate executives
	actors or actresses	movie stars	movie stars
	real estate agents	entrepreneurs	
20-somethings	food service or fast food workers	waiters/waitresses	waiters/waitresses
	retail or sales associates	retail or sales associates	retail or sales associates
	teachers	students	
Middle-aged/baby boomers		doctors	
		lawyers	
		teachers	
Senior citizens	store clerks or cashiers	volunteers	volunteers
	store greeters	retired persons	retired persons
	volunteers	store clerks or cashiers	
Mentally disabled	food service or fast food workers	unemployed	store clerks or cashiers
	grocery baggers	food service or fast food workers	unemployed
	store clerks or cashiers	grocery baggers	
Undocumented workers	food service or fast food workers	food service or fast food workers	field hands or migrant workers
	lawn maintenance workers/landscapers	cleaning service workers	cleaning services workers
	field hands or migrant workers	field hands or migrant workers	

(*table continues*)

Table 1 (*continued*)

Group	Study 1a (Community sample)	Study 1b (Student sample)	Study 1c (Student sample)
High school dropouts	food service or fast food workers retail or sales associates factory workers or laborers	food service or fast food workers store clerks or cashiers retail or sales associates	food service or fast food workers store clerks or cashiers
People with a GED	retail or sales associates food service or fast food workers factory workers or laborers		retail or sales associates food service or fast food workers
High school graduates (with only a high school diploma)	food service or fast food workers factory workers or laborers secretaries or office workers	retail or sales associates skilled manual laborers food service or fast food workers	skilled manual laborers food service or fast food workers
People with a bachelor's degree (college graduates)	teachers business professionals computer or technology programmers	teachers bankers business professionals	business professionals teachers
People with MBAs	managers CEOs or corporate executives business professionals	CEOs or corporate executives investment bankers finance analysts/consultants	CEOs or corporate executives stockbroker
Conservatives	doctors business professionals lawyers		
Republicans	lawyers business professionals CEOs or corporate executives		
Northerners	lawyers business professionals doctors		

Note. CEO = chief executive officer; GED = general education development; MBA = Master of Business Administration.

Method

Participants. The community sample for Study 1a was recruited from public settings (e.g., parks, festivals, food courts) in Chicago and the surrounding area. Surveyors asked every third person or group of people who appeared to be at least 18 years old to complete a short questionnaire. Because the study's measures assumed cultural knowledge, 22 non-U.S. citizens were excluded from the data, leaving 505 participants. Among the 74.5% who consented, 55.8% were women; the mean age was 37.20 years (SD = 13.81) with a range from 18 to 81; 75.2% were European American, 7.1% African American, 5.3% Hispanic, 5.1% Asian American, and 7.2% other or unreported.

Table 2
Preliminary Study: Groups' Typical Roles Compared to Occupational Data

Group	% of employed	*M* % in typical roles	*M* group representation ratio
The middle class	72.0	74.43	1.09
Middle-aged/baby boomers	35.8	43.77	1.22
White men	45.0	56.26	1.25
20-somethings	31.7	42.75	1.35
High school graduates	30.0	41.38	1.38
Black women	5.7	9.46	1.66
High school dropouts	9.5	17.13	1.80
Black men	5.0	9.30	1.86
White women	37.7	76.80	2.04
The poor	20.0	40.73	2.04
People with a bachelor's degree	21.3	44.85	2.11
Hispanics	12.9	32.56	2.52
Asians	4.3	11.80	2.74
The upper middle class	8.0	42.87	3.98
Average			1.93

Note. The mean group representation ratio is the percentage of each typical role occupied by members of each group divided by the percentage of all employed persons who are members of the group and averaged across the group's typical roles. Ratios above 1.00 indicate overrepresentation, and ratios below 1.00 indicate underrepresentation.

The student participants for Study 1b took part in a laboratory setting and received course credit in introductory psychology at a Midwestern university. After excluding 1 non-U.S. citizen from the data, 147 participants remained. Among these students, 57.1% were female; the mean age was 18.82 years (SD = 0.96) with a range from 18 to 22; 69.4% were European American, 17.7% Asian American, 5.4% Hispanic, 3.4% African American, 1.4% Arab American, and 2.7% other or unreported.

A second student sample for Study 1c included participants who took part in a laboratory setting and received course credit in introductory psychology at a Midwestern university (n = 76) or a West Coast university (n = 156). A total of 12 non-U.S. citizens were excluded from the data, leaving 232 participants. Among these students, 65.9% were female, with a mean age of 18.86 years (SD = 1.41) with a range from 18 to 32; 75.4% were European American, 7.3% Asian American, 6.9% Hispanic, 2.2% African American, and 6.4% other or unreported.

Procedure. Participants rated the attributes of groups, roles, or both groups and roles. The oral and written instructions indicated that the survey pertained to how society views common groups in America. To circumvent social desirability pressures, the instructions stressed that participants should not give their personal beliefs but their beliefs about how the general public views these groups.

In Study 1a, each community participant rated either 2 groups or 2 roles, counterbalanced for order. In Study 1b, students rated 13 groups and their 3 corresponding roles in a one-hour small group session. In this sample, each participant rated Black men, Black women, White men, and White women, and 9 additional groups along with each group's associated roles. The 9 groups were half of the remaining 18 groups, which had been split so that each participant received one or the other of these halves. Groups and roles were placed into 2 random orders, which were also reversed for half of the participants, with the caveat that the roles associated with a group were not placed immediately before or after the group. In Study 1c, student participants rated all 22 groups but only the top 2 of their corresponding roles so that participants would have enough time to rate all groups and their corresponding roles, allowing a completely within-subjects design. Groups and roles appeared in 2 random orders that were also reversed for half of the participants. There was no distinction between groups and roles from the participants' viewpoint because both groups and roles were referenced as "groups" within all questionnaires; also, groups and roles were rated by different participants in the community sample.

Measures. To provide measures of group and role stereotypes, participants rated the attributes of groups and roles using a 7-point scale in response to the question, "As viewed by society, how typical are the following attributes of this group?" The items were selected from Fiske et al. (2002) and Diekman and Eagly (2000) to represent traits conveying communion, agency, and competence. The items varied slightly across the participant samples. In all factor analyses reported in this article, the measures were derived by submitting the items to maximum likelihood factor analysis with promax rotation and then inspecting the scree plot, eigenvalues, and variance accounted for. Because the correlations between group stereotypes and role attributes were computed at the mean level, these factor analyses were calculated on the mean-level ratings for groups and roles.[2] Consistent with past research on stereotypes and impression formation, two trait dimensions emerged in all three samples: communion/warmth/collectivism and agency/dominance/competence (Fiske et al., 2002; Judd, James-Hawkins, Yzerbyt, & Kashima, 2005). Within each study, the same items assessed these dimensions for groups and roles.

In Study 1a, a two-factor solution accounted for 88.50% of the variance in ratings of groups. The two factors were (a) communion (kind, nurturing, sincere, warm; $\alpha = .95$) and (b) agency/competence (boastful, arrogant, egotistical, competitive, aggressive, competent, intelligent; $\alpha = .96$). We refer to the second factor as agency/competence because it includes both types of traits. The ratings of roles yielded a very similar two-factor solution accounting for 89.23% of the variance resulting in identical scales for (a) communion ($\alpha = .97$) and (b) agency/competence ($\alpha = .95$). Negative communion items (complaining, nagging, and gullible) were eliminated from the analysis because they did not form a coherent factor.

In Study 1b, accounting for 92.06% of the variance in ratings of groups, the factors for groups were (a) communion (kind, warm, good-natured, sincere, nurturing, tolerant; $\alpha = .98$) and (b) agency/competence (assertive, dominant, confident, aggressive, competent, intelligent; $\alpha = .98$). The ratings of roles yielded a very similar two-factor solution accounting for 93.50% of the variance resulting in identical scales for (a) communion ($\alpha = .99$) and (b) agency/competence ($\alpha = .96$).

In Study 1c, accounting for 93.61% of the variance, the factors for groups were (a) communion (kind, warm, sincere, nurturing; $\alpha = .98$) and (b) agency/competence (capable, skillful, competent, ambitious, dominant, assertive, intelligent, daring; $\alpha = .99$). The ratings of the roles yielded a very similar two-factor solution accounting for 93.69% of the variance resulting in identical scales for (a) communion ($\alpha = .99$) and (b) agency/competence ($\alpha = .98$).[3]

Results and Discussion

Because of the focus of the research on the relations between culturally shared group stereotypes and role attributes (and consistent with Fiske et al., 2002), the data were analyzed at the group level using the average ratings of (a) the group as a whole and (b) the average of its typical roles. The group and role variables were empirically distinct, given that group stereotypes were impressions of each group (e.g., senior citizens), whereas role attributes were impressions averaged across the ratings of each group's 2 or 3 most typical roles (e.g., store clerks or cashiers, store greeters, and volunteers).

Table 3 displays correlations of group stereotypes with their corresponding typical role attributes (averaged across their typical roles). We computed both the Pearson *r* and the intraclass correlation coefficient (ICC; based on absolute value using a two-way mixed effects model where groups were a random selection from a larger population and differences between ratings of groups and roles were fixed; see McGraw & Wong, 1996).[4] As predicted by social role theory, the associations between the groups' stereotypes and the attributes of their typical roles were strong and significant for both stereotype variables in all three studies: group communion correlated with role communion and group agency/competence correlated with role agency/competence. The ICCs indicated not only a positive relationship between group stereotypes and role

[2] In Studies 1b and 1c, factor analyses were also calculated from the mean individual-level correlation matrix across all groups and roles and from each group and role separately across all individuals who rated that group or role. In Study 1a, factor analyses could be computed only on the mean-level ratings because fewer than 20 participants rated each group or role. With a very few exceptions of item loading, the different types of analyses and the different samples produced consistent factor structures.

[3] Correlations between communion and agency/competence were computed for this and the other studies reported in this article. We do not report these because social role theory does not predict any particular relation between these dimensions of meaning. The correlations were not statistically significant, except for the negative relations between role communion and agency/competence in Study 1a, $r(32) = -.41$, $p = .02$; and role behavioral communion and agency/competence in Study 2, $r(24) = -.45$, $p = .02$; and the positive relation between role RIASEC communion and agency/competence in Study 3, $r(20) = .54$, $p = .01$. Overall, these correlations were inconsistent and contrary to the ambivalent stereotype principle that communion and competence are negatively related (see Fiske et al., 2002).

[4] In our data, the ICC indicates the degree of absolute agreement for measurements of group stereotypes and role attributes, which is possible to calculate because the ratings were obtained on the same scale and are assumed to have the same variance (see McGraw & Wong, 1996). These coefficients have an upper bound of 1 but no lower bound (Nichols, 1998). Thus, the ICC can be negative, and negative coefficients indicate a lack of agreement rather than an inverse relationship.

Table 3
Pearson Correlations and Intraclass Correlations (ICCs) Between Group Stereotypes and Predictors

	Group stereotypes											
	Communion						Agency/competence					
	Study 1a		Study 1b		Study 1c		Study 1a		Study 1b		Study 1c	
Predictor	*r*	ICC	*r*	ICC	*r*	ICC	*r*	ICC	*r*	ICC	*r*	ICC
Role attributes (Study 1)												
Communion	**.73*****	**.71*****	**.71*****	**.71*****	**.71*****	**.68*****	−.22	−.16	.25	.21	.13	.11
Agency/competence	−.31	−.26	.16	.12	.30	.27	**.87*****	**.84*****	**.90*****	**.90*****	**.87*****	**.87*****
Role behaviors (Study 2)												
Communion	**.54****	**.42****					−.13	−.17				
Agency/competence	−.36	−1.12					**.80*****	**.85*****				
Role RIASEC (Study 3)												
Communion			**.53****						.43*			
Agency/competence			.15						**.83*****			

Note. $df = 24$ for correlations with Study 1a data, and $df = 20$ for both Study 1b and Study 1c data. Predicted relations are in bold typeface. ICC values are not given in Study 3 because the metric and variance of the two variables were not shared. RIASEC = realistic, investigative, artistic, social, enterprising, and conventional.
* $p < .05$. ** $p < .01$. *** $p < .001$.

characteristics but also a high degree of absolute match between groups and roles.[5]

To determine whether group stereotypes would correspond to roles not selected as typical of the group, we also computed correlations between these group stereotypes and randomly matched social role sets. For each sample, we used a random number generator to create 5 random lists of role sets and paired these with group stereotypes. We then correlated the role attributes and group stereotypes of these random group-role pairings and found that only 2 of the 30 predicted correlations were statistically significant. Averaged across the 5 correlations (using Fisher's *z* transformation) of the random sets in each sample, the relevant correlations were not significantly different from 0—between group communion and role communion, $r = .07$, $Z = 0.77$, $p = .44$ (Study 1a); $r = -.10$, $Z = -0.98$, $p = .33$ (Study 1b); $r = .02$, $Z = 0.20$, $p = .85$ (Study 1c); and between group agency/competence and role agency/competence, $r = -.01$, $Z = -0.12$, $p = .91$ (Study 1a); $r = .03$, $Z = 0.31$, $p = .76$ (Study 1b); $r = .05$, $Z = 0.46$, $p = .65$ (Study 1c).[6] Overall, the correlations of group stereotypes with random roles were much weaker than those between group stereotypes and their corresponding roles.

These data are consistent with the claim that stereotypes stem from observations of the typical social roles enacted by group members. This claim is strengthened by our replication across three data sets testing the relation between groups and roles. Although the method was basically the same across these studies, it differed in several ways. The groups and roles used in each study were somewhat different, as were the number of roles matched to each group (see Table 1). In addition, in the community sample of Study 1a, groups and roles were rated by different participants, whereas in the student samples of Study 1b and Study 1c groups and roles were rated by the same participants. Also, the specific traits used to represent communion and agency/competence varied somewhat across the three studies. Lastly, the data sets represented two different regions of the United States and student samples as well as a community sample. The fact that our results were highly consistent across three different samples with somewhat different methods and measures gives us confidence in the robustness of these findings.

Study 2

Because the typical roles were demonstrated to be generally accurate representations of many of the groups' roles in the Preliminary Study, we argue that the relation between perceptions of typical roles and group stereotypes in Study 1 is not simply due to beliefs about typical roles being a reflection of groups' stereotypes, but at least in part because people's observations of group members' roles are an important basis of stereotypes. However, evidence of accuracy does not completely rule out the interpretation that people's perceptions of role attributes are driven in part by the stereotypes of the groups typically in those roles. Thus, to address this issue, we conducted another study in which participants rated the attributes of roles based on a list of the behaviors accomplished within each occupation, presented without any occupational label. The stereotypical meanings of these role behaviors were then correlated with the group stereotype data from Study 1 to see if role attributes that are less likely to be influenced by group stereotypes still relate to these stereotypes.

[5] In Studies 1b and 1c, because participants rated over half or all groups and their roles, individual-level correlations were computed on each participant's ratings of groups and associated roles, transformed to equally weighted Fisher's *z*-scores, and averaged across the participants. The average individual-level correlations were tested against the standard normal distribution under the null hypothesis that the average correlation is zero (D. A. Kashy, personal communication, January 20, 2006). These correlations displayed the same pattern as the group-level correlations, although they were generally smaller in magnitude.

[6] In this study and Studies 2 and 3, random pairings sometimes matched roles with their correct groups. For example, in Study 1, roles were randomly paired with their correct group in 4.3% of the pairings. In addition, many of the individual roles were related to more than one group, so at least 1 role in the randomly paired set matched a groups' typical role in 27.3% of the pairings.

Method

Participants. The data were collected through Mechanical Turk (see Buhrmester, Kwang, & Gosling, 2011; Mason & Suri, 2012). Participants received $0.50 for completing the 20-min survey online. The sample was restricted to people living in the U.S., and 3 non-U.S. citizens were excluded from the data, leaving 123 participants. Among these participants, 35.8% were female, the mean age was 37.39 years (SD = 13.67) with a range from 18 to 73; 69.9% were White or Caucasian, 10.6% Black or African American, 6.5% Asian, 5.7% Hispanic or Latino, and 7.3% other, mixed race, or unreported. We used the data gathered from this sample with the stereotype data from Study 1a, considering that both were community samples.

Procedure. Participants rated the attributes of occupational roles based on a list of behaviors completed within each occupation. The instructions indicated that the survey pertained to perceptions of different kinds of work, and participants were asked to focus on the behaviors and activities listed, not on specific occupations. The occupational roles used in Study 1 were divided into 3 sets to reduce the time required to complete the survey and thereby lessen participant fatigue. Participants were presented with 1 of these sets, which consisted of 11–12 lists of behaviors, given in a random order. Between 39 and 42 participants rated each list of behaviors.

Behavior lists. Each occupational role used in Study 1a was described by a list of 3–8 behaviors. These behaviors came from occupational data provided by O*NET OnLine (see http://www.onetonline.org/), which is sponsored by the U.S. Department of Labor and developed by the National Center for O*NET Development and frequently updated. For over 900 occupations, the site provides a detailed list of tasks that job incumbents rated for their importance (Van Iddekinge, Tsacoumis, & Donsbach, 2002). To create lists of behaviors for the current study, we used the core tasks rated 75 or higher (on a 100-point scale). We accepted as many as 8 tasks, if available, and at least 3 tasks, which required in 2 instances using some tasks with a rating lower than 75. In one case (legislators—used for the role of politicians), no importance ratings were available, and so we used our judgment in choosing among the listed tasks. In addition, for some occupational roles without a matching occupation in O*NET OnLine, we combined tasks from several relevant occupations (e.g., for the role of manager, behaviors were from general and operations, marketing, and construction managers; for the role of teacher, behaviors were from elementary, middle, and secondary school teachers). If a behavior indicated the name of the occupation, we deleted or reworded it to avoid the name (e.g., for taxi drivers, the word "taxicabs" in "drive taxicabs, limousines, or privately owned vehicles to transport passengers," became "cars"). As an example of the behavior lists resulting from these procedures, the following are the behaviors for food service or fast food workers:

- Serve customers in eating places that specialize in fast service and inexpensive carry-out food.
- Accept payment from customers, and make change as necessary.
- Request and record customer orders, and compute bills using cash registers, multicounting machines, or pencil and paper.
- Clean and organize eating, service, and kitchen areas.
- Notify kitchen personnel of shortages or special orders.
- Communicate with customers regarding orders, comments, and complaints.
- Prepare daily food items, and cook simple foods and beverages, such as sandwiches, salads, soups, pizza, or coffee using proper safety precautions and sanitary measures.
- Select food items from serving or storage areas and place them in dishes, on serving trays, or in takeout bags.

Measures. To provide measures of the traits inferred from these behaviors, participants rated the attributes of people who carry out the listed behaviors using a 7-point scale in response to the question, "How typical would the following attributes be of people who carry out these tasks?" Because these data were correlated with group stereotypes from Study 1a, the same factor structure was used: (a) communion (kind, nurturing, sincere, warm; α = .96) and (b) agency/competence (boastful, arrogant, egotistical, competitive, aggressive, competent, intelligent; α = .95).

After computing the communion and agency/competence scores for each list of behaviors, we then averaged the ratings corresponding to the 3 typical roles from the Preliminary Study used in Study 1a for each group. We name these averaged ratings *role behavioral communion* and *role behavioral agency/competence*. Occupations for which there was no listing in O*NET OnLine (grocery baggers, small business owners, store greeters, unemployed, and volunteers) had to be dropped, and the relevant typical role averages then included only 1 or 2 roles. We used the manager ratings for the business professional role and the CEO ratings for the upper-level manager role.

Results and Discussion

We correlated group stereotypes from Study 1a with their corresponding role behavioral attributes, again using both the Pearson r and ICC. As predicted by social role theory, the associations between the groups' stereotypes and the attributes of their typical roles' behaviors were strong and significant (see Table 3): Group communion significantly correlated with role behavioral communion, and group agency/competence significantly correlated with role behavioral agency/competence. In addition, role behavioral communion was correlated with role communion from Study 1a, $r(24) = .81$, $p < .001$, ICC = .48, $p < .001$; and role behavioral agency/competence was correlated with role agency/competence from Study 1a, $r(24) = .97$, $p < .001$, ICC = .91, $p < .001$.

As in Study 1, to determine whether group stereotypes would correspond to role behaviors not selected as typical of the group, we also computed correlations between 5 sets of randomly matched group stereotypes and role behavior sets. Generally, these correlations were low, and none of the predicted correlations was statistically significant in the expected direction. Averaged across the 5 correlations (using Fisher's z transformation) of the random sets, the correlation between group communion and role behavior communion was negative, $r = -.19$, $Z = -2.07$, $p = .04$, and the correlation between group agency/competence and role behavior agency/competence was not significantly different from 0, $r = .03$, $Z = 0.29$, $p = .77$.

These data are consistent with Study 1 and support the claim that the correlations found in Study 1 appeared because the attributes of groups' typical roles influenced their group stereotypes. In

Study 2, participants did not rate named occupational roles, but the lists of behaviors associated with these roles. Thus, the inferences from the behaviors themselves also correlated with group stereotypes, consistent with social role theory's claim that stereotypes stem from observations of the behaviors enacted in group members' typical social roles. Although these data do not rule out the possibility that participants sometimes thought about occupations by name, our method presented only behaviors, thus making them highly salient, as opposed to occupational labels.

Study 3

As another test of the relationship between group stereotypes and role attributes, we conducted a new study that used a method not dependent on participants' ratings of specific occupations, and thus they had no opportunity to infer role attributes based on the groups commonly represented in each occupation. Instead, information about roles came from expert judgments. This information, presented in O*NET OnLine, consists of occupations' scores on the extent to which 6 types of interests (realistic, investigative, artistic, social, enterprising, and conventional) are likely to be satisfied by each occupation. These types represent Holland's (1997) typology, named RIASEC to correspond to the first letter of each type. Counselors often use this typology to assess people's occupational interests with the aim of matching them to occupations that fit their interests (see Holland, 1996; Nauta, 2010). Occupations' RIASEC scores are based on data pertaining to the characteristics of people who work in the occupation, work activities, skill requirements, and work contexts (see Gottfredson & Richards, 1999). For each occupation, O*NET OnLine provides an occupational interest profile consisting of numerical ratings on each of the 6 RIASEC types, which describes how descriptive and characteristic each type is for that work environment (Rounds, Armstrong, Liao, Lewis, & Rivkin, 2008; Rounds, Smith, Hubert, Lewis, & Rivkin, 1999). To convert these RIASEC types to the traits on which we represented stereotypes, our study participants rated the 6 occupational interest types on communion and agency/competence traits. We then used the occupational interest profiles from O*NET OnLine to weight the relevance of these stereotypic traits for each RIASEC type for each of the occupational roles used in Study 1. These role attributes based on RIASEC ratings were then correlated with the group stereotype data from Study 1 to see if these role attributes, derived from an independent source and converted to communion and agency/competence scores, still predicted group stereotypes.

Method

Participants. The student participants took part in a laboratory setting and received course credit in introductory psychology at a West Coast university. After excluding 4 non-U.S. citizens from the data, 48 participants remained. Among these participants, 75.0% were female; the mean age was 18.75 years ($SD = 2.21$) with a range from 18 to 33; 54.2% were European American, 12.5% Asian American, 12.5% Hispanic, 2.1% African American, and 18.8% other or mixed race. We related the data gathered from this sample to the stereotype data from Study 1b, because both were student samples. We used Study 1b instead of Study 1c because Study 1b included 3 typical roles per group, instead of only 2, and thus should produce more reliable data.

Procedure. Participants rated the attributes required for work based on each of the 6 RIASEC occupational interest descriptions, given in a random order. The written instructions indicated that the survey pertained to perceptions of different kinds of work.

Interest descriptions. The 6 RIASEC occupational interest descriptions (The O*NET Content Model, n.d.), without their names or occupational labels (i.e., the only words presented appear within quotation marks in the next paragraphs), were portrayed to the participants as types of work activities:

- *Realistic occupations* "frequently involve work activities that include practical, hands-on problems and solutions. They often deal with plants, animals, and real-world materials like wood, tools, and machinery. Many of the occupations require working outside, and do not involve a lot of paperwork or working closely with others."
- *Investigative occupations* "frequently involve working with ideas, and require an extensive amount of thinking. These occupations can involve searching for facts and figuring out problems mentally."
- *Artistic occupations* "frequently involve working with forms, designs and patterns. They often require self-expression and the work can be done without following a clear set of rules."
- *Social occupations* "frequently involve working with, communicating with, and teaching people. These occupations often involve helping or providing service to others."
- *Enterprising occupations* "frequently involve starting up and carrying out projects. These occupations can involve leading people and making many decisions. Sometimes they require risk taking and often deal with business."
- *Conventional occupations* "frequently involve following set procedures and routines. These occupations can include working with data and details more than with ideas. Usually there is a clear line of authority to follow."

Measures. To assess role attributes, participants rated the extent to which attributes are required for each type of work, using a 7-point scale to respond to question, "To what extent would the following attributes be required to do this type of work?" This rating was slightly different than in the other studies: Instead of a typicality rating usually used for stereotypes, the participants judged the attributes required for work of this type. We changed the rating slightly because participants might have had difficulty rating the typicality of people doing the work based on such short descriptions. Because these data were correlated with group stereotypes from Study 1b, the same factor structure was used: (a) communion (kind, warm, good-natured, sincere, nurturing, tolerant; $\alpha = .99$) and (b) agency/competence (assertive, dominant, confident, aggressive, competent, intelligent; $\alpha = .92$).

Each of the 6 RIASEC descriptions thus gained a communion score (realistic $M = 3.82$, investigative $M = 3.34$, artistic $M = 3.31$, social $M = 6.14$, enterprising $M = 4.46$, conventional $M = 3.41$) and an agency/competence score (realistic $M = 4.43$, investigative $M = 5.13$, artistic $M = 4.48$, social $M = 4.53$, enterprising $M = 5.82$, conventional $M = 4.26$). To create role attribute ratings based on these occupational interests, we then calculated a communion and agency/competence score for each occupational role by weighting the communion and agency/competence RIASEC ratings by the occupational interest profile (from O*NET OnLine) of the 6 RIASEC types for each occupation. For example, food

service and fast food workers had an occupational interest profile of 78 for realistic, 0 for investigative, 6 for artistic, 39 for social, 50 for enterprising, and 95 for conventional. These profile ratings were multiplied by the communion and agency/competence ratings for artistic, conventional, enterprising, investigative, realistic, and social occupations, respectively. These scores were then added together and divided by the sum of the profile ratings to create a weighted average that represented the communion and agency/competence attributes for the role of food service and fast food workers. When a single matching occupation was missing in O*NET OnLine (for engineers, factory workers, middle-level managers, skilled manual laborers, and teachers), we averaged the occupational interest profiles of the occupations used to create the behavior lists in Study 2. We used the same occupational interest profile for both the middle-level manager and business professional roles.

After computing the weighted communion and agency/competence scores for each role, we then averaged the ratings for the 3 typical roles identified by the Preliminary Study that were used in Study 1b for each group to create typical role attributes scores based on the interest descriptions, which we call *role RIASEC communion* and *role RIASEC agency/competence*. There were some occupations (drug dealers, entrepreneurs, grocery baggers, homemakers, retired persons, small business owners, store greeters, students, unemployed, and volunteers) without a listing in O*NET OnLine, which had to be dropped, so the typical role averages for groups with these roles included only 1 or 2 roles.

Results and Discussion

We correlated group stereotypes from Study 1b with their corresponding typical role RIASEC attributes. We used only the Pearson *r*, as the ICC is appropriate only for measurements that have the same metric and variance (McGraw & Wong, 1996), which is not true of the weighted role RIASEC scores and group stereotypes. As predicted by social role theory, the associations between the groups' stereotypes and the attributes of their typical roles based on the occupational interest profile were strong and significant (see Table 3). Group communion correlated with role RIASEC communion, and group agency/competence correlated with role RIASEC agency/competence. Group agency/competence also correlated with role RIASEC communion, which could be due to the correlation between role RIASEC communion and agency/competence within this method of weighted scoring (see Footnote 3). A partial correlation between role RIASEC communion and group agency/competence, controlling for role RIASEC agency/competence, was not significant, $r(17) = -.04$, $p = .87$, whereas a partial correlation between role RIASEC agency/competence and group agency/competence controlling for role RIASEC communion was significant, $r(17) = .79$, $p < .001$. In addition, role RIASEC communion was correlated with role communion from Study 1b, $r(20) = .44$, $p = .04$; and role RIASEC agency/competence was correlated with role agency/competence from Study 1b, $r(20) = .90$, $p < .001$.

As in previous studies, to determine whether group stereotypes would correspond to role RIASEC ratings not selected as typical of the group, we also computed correlations between 5 sets of randomly matched group stereotypes and role RIASEC sets. Generally, these correlations were low, and none of the predicted correlations was statistically significant in the expected direction. Averaged across the 5 correlations (using Fisher's *z* transformation) of the random sets, the correlations were not significantly different from 0—between group communion and role RIASEC communion, $r = .01$, $Z = 0.91$, $p = .93$, and between group agency/competence and role RIASEC agency/competence, $r = -.06$, $Z = -0.57$, $p = .57$.

These data are consistent with Study 1 and help to refute the claim that the correlations found in Study 1 or Study 2 appeared because role attributes were influenced by group stereotypes. In Study 3, participants rated only the attributes required for the 6 types of occupational interests, not specific occupations. In addition, these same ratings of the 6 occupational types created the scores for every occupational role, weighted by the occupational interest profile for that role. Despite some approximations (i.e., for roles without a specific match in O*NET OnLine and the loss of roles such as homemaker), the correlations were quite strong. Here, as in Study 2, the correlation with role attributes was weaker for communion than for agency/competence, perhaps because communion is more difficult to ascertain from the formal descriptions of occupational behaviors or interests (which focus on tasks to perform, and not the social relationships inherent in these tasks). Overall, however, these results show that perceptions of occupational roles, removed from any occupational names, are still correlated with group stereotypes, consistent with social role theory.

Study 4

Having established the relationship between group stereotypes and role behaviors, we extended these findings to address projected stereotype change and the causal impact of group members' future social roles on the content of their likely future stereotypes. Using an experimental design, the study manipulated groups' future social roles. In placing social roles as a cause of stereotype content, this theory presents an optimistic view of possibilities for stereotype change. Social role theory thus predicts that when a group's social roles change, so will its stereotype content, when these new roles are perceived to require different behaviors and traits than the old roles. Thus, not all role change would result in stereotype change, but only role change that allows different traits to be inferred from behaviors. For a group to be regarded as more competent, for example, its members should acquire roles that are thought to require particularly competent behavior. Substantial changes in group members' role occupancies should change their stereotype toward the qualities perceived to follow from their new roles, even though obtaining new roles can be difficult because of the power of current stereotypes to favor existing roles.

One obstacle to stereotype change is groups' lesser access to roles with demands that differ from those of their current roles. In such circumstances, new role occupants often encounter resistance. This *role incongruity* between group stereotypes and the requirements of new roles fosters prejudice toward group members that lowers the likelihood of their entry into these roles (Eagly, 2004; Eagly & Diekman, 2005; Eagly & Karau, 2002). Backlash against people who seek or obtain new roles is thus a common occurrence (Rudman et al., 2012). Role incongruity prejudice is therefore an impediment to changing group stereotypes because such change requires that new roles make different demands than old roles.

Even when groups gain access to occupational (or other) roles that are perceived as making new and different demands, stereotype change is usually slow, for several reasons. For one, the initial movement of a few group members into new roles usually has little influence on their group stereotype, given the subtyping of such individuals as exceptions within their group (e.g., Brewer, Dull, & Lui, 1981; Richards & Hewstone, 2001). Another possibility limiting change in group stereotypes is that the presence of new role occupants may cause the roles to adapt to their stereotypical attributes. For example, leadership roles have gradually incorporated culturally feminine attributes, coincident with more women occupying these roles (see Koenig, Eagly, Mitchell, & Ristikari, 2011). These changes could stem from women entering these roles or from broader changes in technologies or organizational structures that produce new role demands (e.g., Lipman-Blumen, 2000; Reskin & Roos, 1990). Whatever their causes, changes in role attributes toward the group stereotypes of the new role occupants would slow change in their group stereotypes.

All in all, roles and stereotypes support one another: Typical roles foster group stereotypes, which in turn tend to disqualify group members from roles requiring different characteristics. In addition, pre-existing group stereotypes rationalize existing role distributions and justify the current social structure, slowing social change (e.g., Hoffman & Hurst, 1990; Jost & van der Toorn, 2012). Nevertheless, research by Diekman and Goodfriend (2006) on women's entry into new occupational roles suggests that once groups overcome resistance enough to become well represented in new roles, the new attributes that they gain are evaluated favorably. In other words, with sufficient movement into new roles, role occupants from formerly excluded groups can gain acceptance and favorable evaluation of their new proficiencies.

In the current study, we experimentally manipulated social roles at the group level by informing participants about future role changes likely to occur in several racial and ethnic groups (Asians, Black men, Black women, Hispanics, White men, and White women). In particular, we described our chosen six groups as having new roles in the future—the roles that participants in the Preliminary Study had identified as typical of each of the other groups. For example, depending on experimental condition, participants could learn that Black men will be overrepresented in three roles that were currently typical of one of the other five groups or, in a control condition, of their own group of Black men. We used these 6 groups because race and gender form important stereotyped groups in society, and we had already assessed their most common roles in the Preliminary Study.

With this method, we tested if new roles would lead participants to project different stereotypes, as predicted by social role theory. In analyses of variance (ANOVAs) testing the overall impact of beliefs about roles versus groups on projected stereotypes, we expected that potential future roles would strongly influence group stereotypes, consistent with social role theory, regardless of the group's current stereotype (a future roles main effect). Specifically, when the new roles have different implications for behavior than the old roles, the group's stereotype should change in the direction of its experimentally assigned future roles (i.e., toward the stereotype of the group perceived as currently occupying these roles). When the new roles have similar implications for behavior, there would be no difference between stereotypes of the group in its old versus new roles, but the stereotype would still be similar to other groups in the same new roles. In essence, in this design the strongest form of social role hypothesis would predict that all groups with the same future roles would be judged equivalently; therefore, any groups effects would be small and not interact with future roles. However, we expected that the current group stereotype would not disappear completely, given the simplicity and brevity of the manipulation of future roles. Moreover, the manipulation did not mention the group's current typical roles, which participants could think might endure, despite the addition of new roles. Thus, a weaker main effect of groups, reflecting the groups' pre-existing stereotypes, should be obtained along with the future roles main effect. To the extent that each set of roles adds the same information to each of the prior group stereotypes and that roles are interpreted similarly regardless of the attached group, the group and future role variables would not interact. In addition to these ANOVAs, correlational analyses addressed the magnitude and direction of change for each group within each new set of roles, compared with changes predicted based on role stereotypes from Study 1.

Method

Participants. The data were collected through Mechanical Turk. Participants received $0.20 for completing the 5-min survey online. The sample was restricted to people living in the U.S., and 12 non-U.S. citizens were excluded from the data, leaving 623 participants. Among these participants, 34.2% were female, the mean age was 28.58 years ($SD = 10.05$) with a range from 18 to 75; 72.1% were White or Caucasian, 11.4% Asian, 4.5% Black or African American, 4.3% Hispanic or Latino, and 7.7% other, mixed race, or unreported.

Procedure. Participants received information about one group gaining one set of future roles. They then rated the future typical view of the group on a variety of traits. Specifically, participants were told that

> There have been some surprising shifts of social groups into new occupations that they have rarely held in the past. We want you to think about the implications of changing occupations. For example, demographers predict that in 25–30 years, [White men] will be more common in the occupations of [teachers, homemakers, and nurses] than would be expected based on their overall numbers in the population of the United States. In other words, [White men] will be especially well-represented in these occupations.

Participants were asked to assume that this prediction was correct and to rate the typical view of the group in the future. After completing the measures, participants were debriefed and told that the predictions were created for the purposes of the study.

To satisfy the requirements of our 6 × 6 factorial design, each of 6 groups (Asians, Black men, Black women, Hispanics, White men, White women) was separately paired with the typical roles from each of the 6 groups (as obtained in the Preliminary Study for Study 1a and shown in Table 1). The pairings of each group with its current typical roles were considered control conditions, because they would elicit the present-day stereotype of that group. The pairings of the group with other groups' typical roles yielded assessments of stereotype change in relation to these control conditions.

Measures. Participants rated the typical view of the group in the future ("In 2040, what will the typical view be of [White men] in society?") on 18 traits using a 7-point scale. A factor analysis across all groups produced the following three-factor solution, accounting for 72.48% of the variance: (a) communion (kind, warm, sincere, nurturing; $\alpha = .89$); (b) agency (dominant, arrogant, boastful, egotistical, daring; $\alpha = .86$); (c) competence (capable, skillful, competent, ambitious, intelligent; $\alpha = .92$). Negative communion items (nagging, complaining, gullible) were eliminated from analysis to parallel the previous data, and the item "assertive" double-loaded on agency and competence and was not included in either scale.[7] In the 2-factor solution, accounting for only 64.05% of the variance, competence items loaded with communion items. Thus, the 3-factor solution was more comparable than the 2-factor solution to the scales used in Studies 1a, 1b, and 1c.

Actual stereotype change. To assess the direction and magnitude of the future changes in group stereotypes, we produced a set of effect sizes, in the form of Cohen's *d*, calculated by dividing difference scores between the control conditions and the conditions with new roles by the mean within-cell standard deviation for the relevant stereotype dimension. This effect size measured the *actual change* in stereotypes by representing the difference between the stereotype of the group in its current typical roles (in the control condition) and in its changed future roles, which measured how the stereotype of the group was projected to change with different future roles. On each of the three stereotype dimensions, positive *d*s indicated an increase in ratings and negative *d*s indicated a decrease in ratings for the group in its new roles compared to its present roles.

Expected stereotype change. To predict whether a stereotype should increase, decrease, or stay the same when a group attained new roles, we looked to the community data from Study 1a for the attributes of the roles typical for each group, assuming that these data were most relevant to the current study's community sample. The combined agency/competence measure from this earlier community sample was split into agency (competitive, boastful, arrogant, egotistical, aggressive) and competence (intelligent, competent) to match the current dimensions of stereotypes, although the specific traits differed slightly. Then, based on these earlier data, the difference between the roles for each pair of groups used in the current study was represented by an effect size statistic in the form of Cohen's *d*, calculated by dividing difference scores by the mean within-cell standard deviation for the relevant stereotype dimension based on the 6 racial and ethnic groups used in the current study. On each of the three stereotype dimensions, these effect sizes represented the *expected change* in stereotypes from groups moving from their current typical roles to new typical roles. The logic was that, when occupying another group's roles in the future, each group was expected to gain the same stereotype, which was described by that group's roles. Positive *d*s indicate an expected increase in ratings and negative *d*s indicate an expected decrease in ratings for the target group with its new future roles compared to in its current roles. In correlational analyses, these expected change effect sizes were compared with the actual change effect sizes.

Results

Before presenting the correlational analyses, we provide an overall ANOVA of the 6 (groups: Asians, Black men, Black women, Hispanics, White men, White women) × 6 (future roles: Asians', Black men's, Black women's, Hispanics', White men's, White women's) design. This ANOVA, computed on each of the three stereotypic dimensions, assessed the overall weight of roles versus groups in creating projected stereotypes in the future.

On communion, the future roles main effect was significant, $F(5, 586) = 22.61$, $p < .001$, $\eta_p^2 = .16$, and larger in magnitude than the groups main effect, $F(5, 586) = 4.30$, $p = .001$, $\eta_p^2 = .04$. The Groups × Future Roles interaction was not significant, $F(25, 586) = 1.16$, $p = .27$, $\eta_p^2 = .05$. As seen in Table 4, which designates Tukey's honestly significant difference (HSD) tests within groups and within future roles, groups designated to acquire the roles of White women in the future were highest on communion, whereas groups designated with the future roles of Hispanics and White men were lowest. Group ratings showed less differentiation between projected stereotype ratings, with White women and Black women higher than White men, but all other groups rated equivalently.

On agency, the future roles main effect was significant, $F(5, 586) = 24.02$, $p < .001$, $\eta_p^2 = .17$, and larger in magnitude than the groups main effect, $F(5, 586) = 4.77$, $p < .001$, $\eta_p^2 = .04$. The Groups × Future Roles interaction was not significant, $F(25, 586) = 1.27$, $p = .17$, $\eta_p^2 = .05$. As seen in Table 5, the ratings of the future roles were in three distinct categories: groups designated to acquire the roles of White men in the future were rated the highest on agency, followed by the roles of Black men and Asians, with the roles of Hispanics, White women, and Black women being the lowest. Group ratings showed less differentiation between stereotype ratings, with White men higher than Asians, Black men, and Hispanics, and all other groups equivalent.

On competence, the future roles main effect was again significant, $F(5, 586) = 31.93$, $p < .001$, $\eta_p^2 = .21$, and larger in magnitude than the groups main effect, $F(5, 586) = 3.65$, $p = .003$, $\eta_p^2 = .03$. As seen in Table 6, groups designated to acquire the roles of White men in the future were highest in competence, and those to acquire the roles of Hispanics were the lowest. Group ratings, however, placed White men with Hispanics as the lowest in competence, with Asians highest. In addition, the Groups × Future Roles interaction was significant, $F(25, 586) = 1.66$, $p = .02$, $\eta_p^2 = .07$. One-way ANOVAs, computed using the overall ANOVA error term, across future roles within each group indicated significant variability in competence for all groups across the future roles (*p*s $< .001$), showing that each group stereotype fluctuated with future roles. However, ANOVAs across groups within each future role found that the groups designated to acquire White women's roles ($p = .006$) or Black women's roles ($p < .001$) in the future varied by group, whereas the competence of groups designated to acquire other future roles was relatively stable across the groups (*p*s $> .18$). This unexpected interaction may reflect participants' ability to interpret the role of teacher (which was included in both Black women's and White women's roles) in multiple ways, depending on the group. For example, "Asian teachers" might have been viewed as teaching high-school math, compared to "White women teachers," who might have been imagined as elementary

[7] Communion and competence were significantly correlated, $r(620) = .48$, $p < .001$, as were agency and competence, $r(620) = .36$, $p < .001$. Communion was not significantly correlated with agency, $r(620) = -.07$, $p = .06$.

Table 4
Study 2: Means and Standard Deviations for Communion by Groups and Future Roles

Future roles	Groups: Asians		Black men		Black women		Hispanics		White men		White women		Total		Without control conditions	
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*
Asians'	3.54	0.77	3.99	1.11	3.69	1.28	4.38	0.88	3.64	0.81	4.43	0.90	$3.95_{b,c}$	1.02	4.02_{b}	1.04
Black men's	3.66	0.98	3.31	0.77	4.03	1.17	3.56	1.10	3.58	0.81	4.27	1.16	$3.72_{b,c,d}$	1.03	$3.81_{b,c}$	1.06
Black women's	4.08	1.15	4.19	1.29	4.20	1.28	3.88	1.26	3.53	1.33	4.83	1.12	4.11_{b}	1.28	4.10_{b}	1.28
Hispanics'	3.34	1.09	3.06	1.09	3.81	1.14	3.53	1.41	3.10	0.93	3.22	1.22	3.34_{d}	1.16	3.31_{c}	1.11
White men's	3.78	1.21	3.50	0.82	3.87	1.59	3.25	1.26	2.96	1.15	3.93	1.24	$3.54_{c,d}$	1.26	$3.67_{b,c}$	1.25
White women's	4.90	1.34	5.29	1.13	4.85	1.13	4.56	1.02	4.64	1.31	4.91	1.43	4.86_{a}	1.22	4.85_{a}	1.19
Total	$3.89_{a,b}$	1.19	$3.91_{a,b}$	1.28	4.07_{a}	1.30	$3.86_{a,b}$	1.23	3.58_{a}	1.19	4.28_{b}	1.29				
Without control conditions	3.97	1.25	4.04	1.33	4.05	1.31	3.93	1.19	3.70	1.16	4.15	1.23				

Note. $N = 622$, with cell *n*s ranging from 14 to 19 participants. Role or group marginal means that do not share a common subscript differed significantly at $p < .05$ by the Tukey's honestly significant difference method.

school teachers, a role likely seen as requiring less intelligence. Thus, for competence (but not for communion or agency), women's future roles evidently took on somewhat different meaning depending on the group. However, consistent with social role theory, future roles were more influential than current group stereotypes overall and for most of the groups.[8]

These analyses indicated that future roles were more important to groups' future stereotypes than current beliefs about the group. Although these groups still had distinct stereotypes (i.e., the groups main effects), their future typical roles had greater influence (i.e., the future roles main effects) on all three stereotype dimensions. To test our hypothesis that the projected stereotypes of groups in future roles related to the attributes of their roles, we then correlated the mean stereotype for future roles (see the Total column in Tables 4–6) with the matching typical role attributes computed from Study 1a. This analysis demonstrates, for example, whether the ratings on communion across future roles in the current data correlated with the role set's communal attributes from Study 1a. Although there are only 6 such ratings (6 possible sets of future roles), the projected stereotypes of groups in these roles were highly correlated with the role attributes from Study 1a on communion, $r(4) = .92$, $p = .01$; agency, $r(4) = .97$, $p = .002$; and competence, $r(4) = .82$, $p = .04$.[9] Although these analyses are consistent with our claim that a change in future roles created projected stereotypes, these analyses did not directly examine the direction or magnitude of the stereotype change caused by future roles.

To test whether the direction and magnitude of the projected changes in group stereotypes from moving into new roles were similar to the expected changes, we used the actual change effect sizes in concert with the expected change effect sizes (see Method). For example, to assess stereotype change for White men in Hispanics' roles, the expected change effect size (*d*) comparing competence ratings of White men's roles to Hispanics' roles in Study 1a was −1.19. Thus, if White men were to change to Hispanics' roles in the future, their perceived competence should diminish, toward that of Hispanics' roles. Actual change, comparing White men in White men's roles to White men in Hispanics' roles in the current data, indicated White men in Hispanics' roles did, as expected, have lower competence ratings, with an effect size (*d*) of −1.80 for this difference. However, for White men in Asians' roles, the effect size comparing competence ratings of White men's roles with Asians' roles in Study 1a was only 0.09. Thus, if White men were to change to Asians' roles in the future, we would not expect their perceived competence to change because White men's and Asian's roles are stereotyped similarly on competence, and the actual change effect size indicates that there was, indeed, little change, with an effect size of −0.26.

As a test of our predictions that actual change would follow expected change, we examined the relations between the magnitudes of the expected and actual changes in stereotypes. Figures 1, 2, and 3 depict these expected and actual relations on each stereotype dimension. To gauge the strength of these relations, we computed the Pearson *r* and ICC (again based on absolute value using a two-way mixed effects model). The Pearson *r*s were large and positive, showing that expected change predicted the actual change in groups' stereotypes on communion, $r(28) = .88$, $p < .001$; agency, $r(28) = .91$, $p < .001$; and competence, $r(28) = .65$, $p < .001$. Similarly, the ICCs, which take into account the absolute match between the two sets of effect sizes, were large and positive on communion, ICC = .86, $p < .001$; agency, ICC = .83, $p < .001$; and competence, ICC = .78, $p < .001$.

[8] To reduce the influence of the control conditions (in which future roles matched current roles, so no stereotype change was expected) on these analyses, we also computed one-way ANOVAs by future roles and by groups omitting the control conditions to see whether the same effects would occur. The results showed that future roles still had a significant effect on communion, $F(5, 515) = 17.54$, $p < .001$, $\eta_p^2 = .14$; agency, $F(5, 515) = 18.69$, $p < .001$, $\eta_p^2 = .15$; and competence, $F(5, 515) = 26.59$, $p < .001$, $\eta_p^2 = .21$. The future roles effect remained stronger than the groups effect on communion, $F(5, 515) = 1.36$, $p = .24$, $\eta_p^2 = .01$; agency, $F(5, 515) = 2.74$, $p = .02$, $\eta_p^2 = .03$; and competence, $F(5, 515) = 3.51$, $p = .001$, $\eta_p^2 = .03$. Tukey's HSD tests within groups and within future roles on these means can also be seen in Tables 4–6.

[9] We also calculated these correlations using the projected stereotype means without the control groups to eliminate what was likely the best match to group stereotypes from Study 1a. These correlations were similar on communion, $r(4) = .87$, $p = .02$; agency, $r(4) = .92$, $p = .01$; and competence, $r(4) = .83$, $p = .04$.

Table 5
Study 2: Means and Standard Deviations for Agency by Groups and Future Roles

Future roles	Groups: Asians *M*	Asians *SD*	Black men *M*	Black men *SD*	Black women *M*	Black women *SD*	Hispanics *M*	Hispanics *SD*	White men *M*	White men *SD*	White women *M*	White women *SD*	Total *M*	Total *SD*	Without control conditions *M*	Without control conditions *SD*
Asians'	2.95	0.82	3.61	1.19	3.80	1.20	3.33	0.86	4.07	0.67	4.02	1.28	3.64_{a}	1.08	3.77_{a}	1.08
Black men's	3.27	1.36	3.61	0.90	3.59	1.35	2.80	1.19	3.83	1.34	4.04	1.26	3.51_{a}	1.28	$3.49_{b,c}$	1.34
Black women's	2.75	1.03	2.72	1.17	2.79	1.24	3.44	1.83	3.61	1.44	2.67	1.21	3.02_{b}	1.38	$3.05_{c,d}$	1.40
Hispanics'	2.74	1.68	2.34	1.30	2.54	0.92	2.84	1.28	2.99	1.34	2.25	1.18	2.61_{b}	1.28	2.57_{d}	1.28
White men's	3.86	1.00	3.54	0.89	4.27	1.01	4.11	1.11	4.92	1.10	4.52	1.28	4.22_{c}	1.14	4.07_{a}	1.10
White women's	2.56	0.80	2.74	1.07	3.23	1.43	2.72	1.15	2.94	0.94	3.04	1.61	2.87_{b}	1.19	2.84_{d}	1.10
Total	3.03_{a}	1.20	3.09_{a}	1.19	$3.39_{a,b}$	1.32	3.20_{a}	1.34	3.73_{b}	1.32	$3.41_{a,b}$	1.52				
Without control conditions	3.05_{a}	1.26	2.98_{a}	1.21	3.49_{a}	1.31	3.27_{a}	1.34	3.50_{a}	1.24	3.48_{a}	1.50				

Note. $N = 622$, with cell *n*s ranging from 14 to 19 participants. Role or group marginal means that do not share a common subscript differed significantly at $p < .05$ by the Tukey's honestly significant difference method.

Discussion

Overall, the results show that groups' expected future roles had a greater influence on their projected stereotype than their current group stereotype when projecting groups' attributes into the future assuming that their roles would change. Thus, consistent with social role theory, participants looked primarily to role information to decide what the attributes of the six groups would be in the future. These results indicated that changes in roles caused changes in projected stereotypes, with the direction and amount of expected change matching actual change extremely well. Yet, these findings also underscore that not all role changes yield changes in stereotypes, but only changes to roles that make different demands than groups' existing roles. Thus, when role attributes were similar and stereotype change was not expected, little change occurred (see Figures 1–3).

Consider the implications of these findings for the female gender stereotype, which has remained highly communal despite massive change in women's roles in the 20th century. However, most of the movement of women from homemaking to employment has put them in occupational roles that are perceived as not especially agentically demanding but highly communally demanding. Women are thus especially poorly represented in higher level leadership roles (e.g., Eagly & Carli, 2007) and somewhat underrepresented in other agentically demanding occupational roles (Cejka & Eagly, 1999). The communal demands of women's occupations are apparent in their employment in the expanding service, educational, and health care sectors of the economy. Specifically, the six most common occupations for women in the United States are secretary and administrative assistant; registered nurse; elementary and middle school teacher; cashier; nursing, psychiatric, and home health aides; and retail salespersons (U.S. Department of Labor, 2010). In addition, women still perform the majority of domestic work (e.g., Bianchi, Robinson, & Milkie, 2006; U.S. Department of Labor, Bureau of Labor Statistics, 2013b). Therefore, it is not surprising that the partial reviews of gender stereotyping conducted so far have not yielded evidence of decreased gender stereotyping on communion or agency (e.g., Lueptow, Garovich-Szabo, & Lueptow, 2001). Yet, as argued by Wood and Eagly (2012), women's shift to paid employment may have elevated their perceived competence (e.g., Pew Research Center, 2008) and broadened their stereotype to encompass different subgroups of women.

One limitation of the current study is possible demand characteristics that encourage participants to use role information in describing future group stereotypes because it was the only information presented. Thus, this demonstration is artificial in that other information usually available in the real world was not presented. However, in favor of our design, role information becomes very salient in natural settings because it is repeatedly paired with multiple group members over time and in different settings and recurrently points to the behaviors that these individuals typically perform. In addition, participants could have clung to their group stereotypes despite changes in future roles if they believed that stereotypic group attributes are essential traits of group members. Yet, future research could use more naturalistic paradigms that embed role information along with other types of information in the settings of everyday life.

Another remaining question is how group members could change their roles in natural settings, despite some resistance. In some contexts, societal actions may require role distributions to change, for example, by imposing quotas for women in leadership roles (Dahlerup, 2013; Kogut, Colomer, & Belinky, 2013). Although the effects of such changes have not been extensively studied, it appears that such quota-mandated changes can cause attitudes and stereotypes to change in directions favorable to women's continued occupancy of leader roles (Pande & Topalova, 2013).

Another possibility is that, to fit to a new role, group members change how they present themselves in ways that address any deficiencies implied by their existing group stereotypes. This logic is inherent in the title of Steele's (2010) book, *Whistling Vivaldi*, which presents the idea that careful self-presentation (e.g., by a Black man) can reduce the likelihood that he will be unfavorably stereotyped. Changing individuals rather than social structures is consistent with American individualism, whereby causes are ascribed more to persons than situations (Oyserman, Coon, & Kemmelmeier, 2002). Individual change is thus the focus of many U.S. social programs that

Table 6
Study 2: Means and Standard Deviations for Competence by Groups and Future Roles

Future roles	Groups: Asians *M*	Asians *SD*	Black men *M*	Black men *SD*	Black women *M*	Black women *SD*	Hispanics *M*	Hispanics *SD*	White men *M*	White men *SD*	White women *M*	White women *SD*	Total *M*	Total *SD*	Without control conditions *M*	Without control conditions *SD*
Asians'	5.12	0.89	4.99	1.28	4.87	1.49	5.29	0.82	5.07	1.00	5.31	0.99	$5.11_{a,b}$	1.09	$5.10_{a,b}$	1.13
Black men's	5.08	1.18	4.04	1.20	4.40	1.18	3.78	1.23	4.18	1.19	5.33	0.85	4.46_{c}	1.25	4.54_{c}	1.25
Black women's	4.83	1.36	4.41	1.21	3.86	0.98	4.57	1.11	4.05	1.16	4.53	1.05	4.38_{c}	1.17	4.47_{c}	1.18
Hispanics'	3.96	1.24	3.52	1.73	3.54	1.28	3.73	1.65	3.26	1.08	3.19	1.42	3.52_{d}	1.41	3.48_{d}	1.36
White men's	5.50	1.10	5.41	1.03	5.80	0.75	4.93	1.21	5.37	1.20	5.58	0.80	5.43_{a}	1.04	5.44_{a}	1.01
White women's	5.25	1.18	5.39	0.94	4.62	1.04	4.11	1.17	4.36	1.16	4.55	1.17	$4.72_{b,c}$	1.18	$4.75_{b,c}$	1.19
Total	4.98_{a}	1.23	$4.63_{a,b}$	1.41	$4.54_{a,b}$	1.33	4.39_{b}	1.33	4.39_{b}	1.30	$4.74_{a,b}$	1.31				
Without control conditions	4.96_{a}	1.29	$4.75_{a,b}$	1.43	$4.65_{a,b}$	1.36	$4.52_{a,b}$	1.22	4.19_{b}	1.24	4.78_{a}	1.34				

Note. $N = 622$, with cell *n*s ranging from 14 to 19 participants. Role or group marginal means that do not share a common subscript differed significantly at $p < .05$ by the Tukey's honestly significant difference method.

seek to improve group members' access to desirable roles through education and training.[10] For example, because older adults are perceived as less cognitively competent than younger adults, educational programs that support their competence by imparting knowledge of new technologies are regarded as desirable for improved access to well-paying jobs (cf. Berger, 2009). Likewise, when stereotypes were made salient, obese individuals and Black men used self-presentational strategies (wearing clean clothes or smiling) that negated their group stereotypes (disease or violence, respectively) and thus mitigated the prejudices they might otherwise encounter (Neel, Neufeld, & Neuberg, 2013). In addition, Arabs who did (vs. did not) portray themselves as warm and competent in job applications overcame their group stereotypes of low warmth and competence and thus were more likely to be called for a job interview (Agerström, Björklund, Carlsson, & Rooth, 2012). In general, behaving in ways that negate unfavorable group stereotypes lessens prejudice and discrimination and thereby helps to move individual group members into new roles.

Once many members of a group have moved into new social roles, overcoming these obstacles, perceivers' observations of the group should change, resulting in a change in stereotypes, as shown in the current data. Although we argue that the relationship between typical roles and group stereotypes is an important causal link, we also acknowledge that it is embedded within a larger set of relationships.

General Discussion

Our research provides the first test of social role theory as a general theory of stereotype content. From this perspective, role behaviors in local contexts constitute the elementary observations that produce group stereotypes. Occupational roles, broadly defined to include unpaid and illegitimate occupations, provide especially important observations because they differentiate groups from one another more than family roles, for example. Moreover, these roles and their occupants are highly visible in everyday life through direct observation and media exposure. The traits that perceivers infer from group members' role behaviors generalize from roles to groups because group membership is confounded with role occupancies. In the current research, groups' stereotypes were predicted remarkably well from the traits associated with their typical social roles. Attesting to the power of this demonstration, the design of the correlational studies not only assessed stereotypes across a wide range of groups but also demonstrated robustness by using slightly different methods in each study. The results comprised strong, consistent relations between group stereotypes and role attributes (Studies 1a, 1b, and 1c), attributes of role behaviors (Study 2), and attributes of role occupational interests (Study 3). In addition, Study 4 supported a causal relationship between beliefs about typical roles and group stereotypes, with projected stereotypes changing depending on the typical roles that groups are presumed to occupy in the future. Actual change in stereotypes was strongly related to expected change, based on the new social roles attributed to the groups. Overall, these results support social role theory's predictions about the origins of stereotypes and the conditions under which stereotypes change.

The plausibility that observations of social roles create stereotypes is enhanced by our demonstration that beliefs about groups' typical roles have a substantial component of accuracy. Although it is possible to argue that social perceivers' ideas about groups' social roles might also reflect inferences from stereotypic attributes to likely roles, we think that this process is less plausible than correspondent inference from role behavior to groups' attributes, given the ready access that social perceivers have to information

[10] In fact, we tested this idea in Study 1c by assessing participants' beliefs about the skills that group members should acquire to improve their access to desirable social roles. Factor analysis of the perceived desirability of different types of training produced a two-factor solution accounting for 87.39% of the variance: (a) emotional skills (training in emotional intelligence, sensitivity training; $\alpha = .90$) and (b) practical skills (job skills training, educational opportunities, training in basic academic skills, training in negotiation skills, and training in public speaking; $\alpha = .94$). Participants judged that groups lower in communion would benefit more from training related to emotional skills, $r(20) = -.65$, $p = .001$, as well as somewhat from training related to practical skills, $r(20) = -.46$, $p = .03$. Also, participants judged that groups lower in agency/competence would benefit more from training related to practical skills, $r(20) = -.71$, $p < .001$, but not emotional skills, $r(20) = .10$, $p = .66$. These findings suggest that stereotypes imply deficits in skills that could be overcome with appropriate training, which would change groups' access to social roles, and thus could be a catalyst for stereotype change.

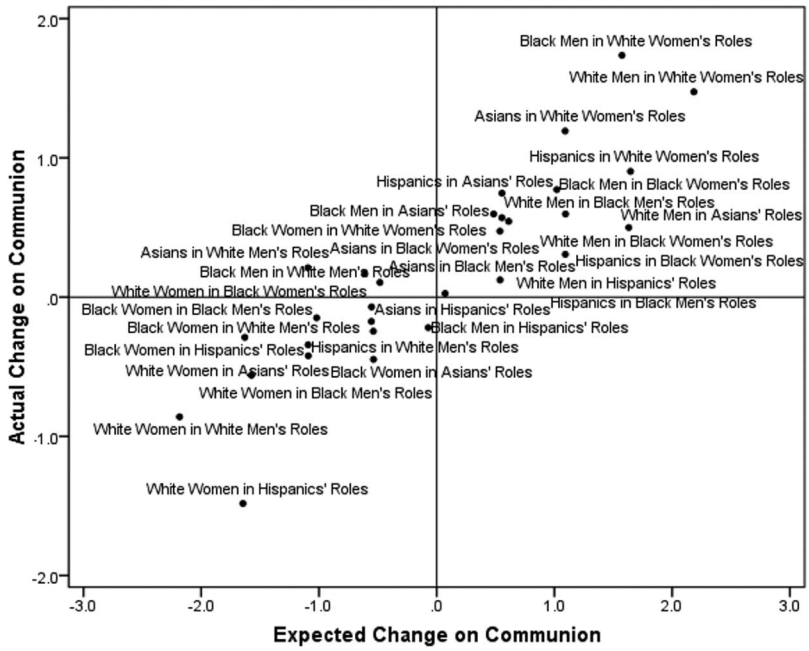

Figure 1. Expected and actual change on communion stereotypes in each condition, represented in standard deviation units (*d*). Positive *d*s indicate an increase in ratings, and negative *d*s indicate a decrease in ratings. Expected change compares each group's current typical roles to its assigned future roles, both based on ratings from Study 1a. Actual change compares each group in its current roles to the same group in its experimentally assigned new roles.

about the social roles commonly occupied by most social groups. Social perceivers have no reason to guess about the distributions of groups into roles that they observe on a daily basis—for example, Hispanics mowing lawns, gay men styling hair, and poor people working in fast food or having no job at all. As our data showed, such observations are in fact generally accurate depictions of groups' role occupancies; for most social groups, blatant inaccuracy about groups' roles would be challenged by everyday observations. In addition, the data in Studies 2 and 3 showed that the relationship between group stereotypes and role attributes holds when role attributes are based on role behaviors or even on occupational interest profiles, which are conceptually distinct from specific occupational labels that could allow participants to reason from their knowledge of which groups are commonly represented in the occupation. Finally, the experimental data in Study 4 as well as past research on social role theory (e.g., Eagly & Steffen, 1986) demonstrate the causal relationship from roles to stereotypes.

Dimensionality of Stereotypes

Consistent with our correlational studies, stereotypes are often represented with a two-dimensional stereotype structure (e.g., Abele & Wojciszke, 2007; Fiske, Cuddy, & Glick, 2007; Judd et al., 2005). However, Study 4 yielded three stereotype dimensions: communion, agency, and competence. Thus, the specific stereotypes from Study 4 are not exactly comparable to the stereotypes from the correlational studies because of their different factor structure. This three-factor solution is interesting in light of how researchers have operationalized agentic and competent traits. Stereotype researchers, following the precedent of Fiske et al. (2002), have usually labeled this dimension *competence* and represented it mainly by adjectives such as intelligent and competent. Competence has emerged as important for stereotypes of national and ethnic groups (e.g., Phalet & Poppe, 1997). In contrast, investigators of gender stereotypes have typically labeled this dimension as *agency* or *instrumentality* and represented it mainly by adjectives such as assertive and competitive (e.g., Abele, 2003; Eagly & Steffen, 1984) because it is mainly agency that differentiates stereotypes of men and women, not competence (Cejka & Eagly, 1999; Newport, 2001; Pew Research Center, 2008; Williams & Best, 1990). In addition, on a theoretical and empirical basis, competence can also pair with warmth and nurturance (cf. Brambilla, Sacchi, Castellini, & Riva, 2010), as it did in the two-factor solution in Study 4.

These considerations concerning gender stereotypes clarify why the factor structure differed across our studies. Our measure of agency/competence included both types of traits in our correlational studies, which dealt with a wide variety of social groups. However, agency and competence separated into two factors in Study 4, probably because of the greater emphasis on gender stereotypes given that 4 of the 6 groups involved gender distinctions.

In addition, there are specific stereotypic attributes associated with particular groups that are not well represented by this two dimensional stereotype structure. For example, Reyna, Dobria, and Wetherell (2013) found that stereotypes of immigrants often go beyond these two dimensions: Canadians were judged as passive, Mexicans as family oriented, Arabs as religious, and Chinese as socially awkward. Although our research focuses on communion and agency/competence stereotypes, as has other research, social

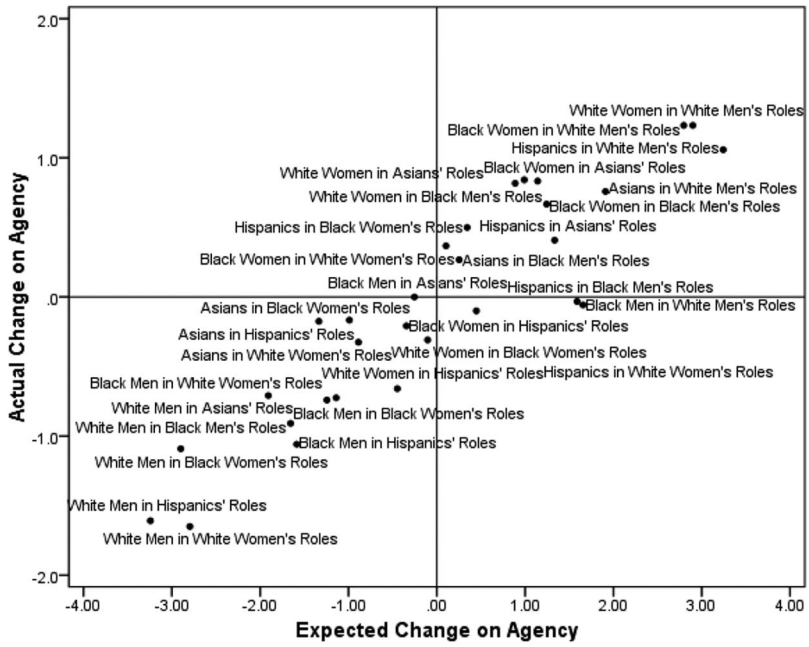

Figure 2. Expected and actual change on agency stereotypes in each condition, represented in standard deviation units (*d*). Positive *d*s indicate an increase in ratings, and negative *d*s indicate a decrease in ratings. Expected change compares each group's current typical roles to its assigned future roles, both based on ratings from Study 1a. Actual change compares each group in its current roles to the same group in its experimentally assigned new roles.

role theory could also apply to these other types of unique stereotypes. Social roles create stereotypes because of their implications for behavior, whereby these behaviors are seen by others and generalized into stereotypes through correspondent inference. Thus, social perceivers use occupational and other types of social roles to organize behaviors into more general concepts that describe the everyday behaviors that occupants of those roles enact. Trait-specific stereotypes outside of communion and agency/competence could be created in the same way, through unequal representation of groups into the roles or specific behaviors that demonstrate these traits, in the manner that social perceivers observe disproportionate representation of African Americans in many sports and thus stereotype African Americans as athletic. Future research should continue to explore contextual variability of the dimensionality of stereotypes and the adequacy of two dimensions to represent stereotype content across many groups.

Theories of Stereotype Content

Our research supports the social role theory claim that correspondent inference from group members' typical role behaviors to their group stereotypes is a key process that creates stereotypes. This principle that stereotypes stem from observations of individual group members is generally consistent with some other theories about the creation of beliefs about groups. For example, Ridgeway's (2006; Ridgeway & Erickson, 2000) status construction theory suggests that social perceivers' observations of behavior in local interactional contexts where members of one group exert more influence than members of another group create beliefs about the greater competence and worthiness of members of the more influential group. These beliefs are shared and become consensual group stereotypes. In addition, Fiedler and Walther (2004) argued in their cognitive-environmental theory of stereotyping that the structure of the environment can create stereotypes through observation and learning even without any motivated or biased processing by social perceivers. The social environment is structured by social roles into which members of social groups are nonrandomly distributed. This confounding of roles and group memberships creates group stereotypes by the ubiquitous psychological processes of learning and correspondent inference whereby role attributes are ascribed to social groups.

Social role theory has a different emphasis than theories emphasizing molar correlates of groups' stereotypes such as groups' status, intergroup relations, or access to resources, but it is nevertheless not inconsistent with these theories. For example, Fiske et al.'s (2002) stereotype content model asserts that stereotype content derives from people's perceptions of two aspects of intergroup relations. In this approach, groups' high status evokes stereotypes of competence and groups' cooperative interdependence evokes stereotypes of warmth (e.g., Eckes, 2002; Fiske et al., 2002). Similarly, Alexander et al. (1999) posited that patterns of intergroup relations, including status, power, and goal compatibility, underlie stereotypes.

The compatibility of our role approach with these intergroup perspectives stems from the effects of social roles on intergroup relations. Specifically, occupational roles are highly influential in determining adult status (Jackman & Jackman, 1983; Treiman, 1977). Also, occupational roles can foster interdependence with other groups that is cooperative (e.g., teachers, social workers) or competitive (e.g., law-

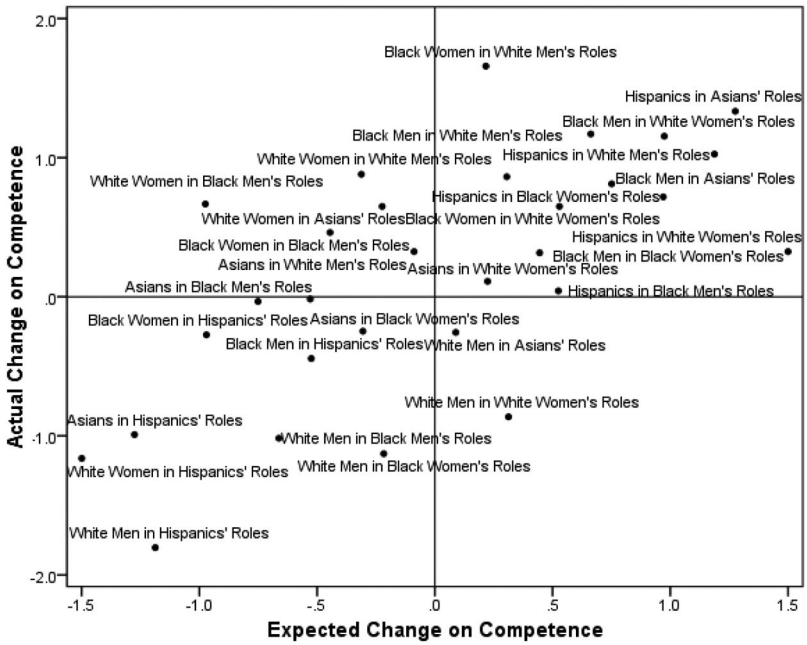

Figure 3. Expected and actual change on competence stereotypes in each condition, represented in standard deviation units (*d*). Positive *d*s indicate an increase in ratings, and negative *d*s indicate a decrease in ratings. Expected change compares each group's current typical roles to its assigned future roles, both based on ratings from Study 1a. Actual change compares each group in its current roles to the same group in its experimentally assigned new roles.

yers, business executives). However, in contrast to theories that emphasize broad, molar social structural correlates of stereotypes, social role theory focuses on perceivers' more elementary, commonplace observations of group members in their typical roles, which occur through direct observation and indirectly through exposure to a wide variety of media. We think it likely that the critical information that social perceivers notice consists of the everyday activities that they observe carried out by members of social groups. For example, they observe mentally disabled individuals working as grocery baggers, women caring for babies and teaching elementary school, White men leading corporations and numerically dominating the Congress, the rich working as lawyers and corporate executives, and so forth. Therefore, the relationships between groups' representations in occupational roles and overall group stereotypes are understandably strong. Had it been practical for our research to encompass additional classes of social roles—for example, leisure and recreational roles—our findings may have been even stronger.

Stereotype formation may differ for groups that are rarely observed (e.g., inhabitants of remote nations). If social role information is not available, molar cues may provide information that affects stereotypes. In particular, nationality stereotypes are predicted by perceptions of likability, power, and conflict among nations, most likely related to salient international events (Phalet & Poppe, 1997). For example, Americans students' very negative stereotype about Iranians in Eagly and Kite's (1987) study probably reflected the highly publicized hostage crisis in which Iranians had held Americans captive for 444 days in 1979–1981. To understand the content of different types of stereotypes, research should address the relative importance of molar cues pertaining to social structure and international relations versus observations of specific social roles.

To understand the roots of social stereotypes and possibilities for changing them, social psychologists should explore stereotype content with insights from varied theoretical perspectives. As many social psychologists have argued, the perception of individuals based on their group membership restricts their opportunities and creates prejudice in some contexts. To understand how to ameliorate such negative effects, content theories should be explicit about the informational sources of stereotypes' specific content as well as the social psychological processes that enable stereotyping. Our research provides strong support for the social role theory of stereotyping in relation to a wide range of groups and thereby provides guidance concerning how stereotypes can be changed.

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