

Navigating social roles in pursuit of important goals:
A communal goal congruity account of STEM pursuits

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Abstract

Our exploration of communal goal processes in decisions about science, technology, engineering, and mathematics (STEM) careers integrates research on goal pursuit processes with research on stereotyping and on social role occupancy. Social roles encompass expectations and resources that can originate from group membership in broad social categories, such as gender, ethnicity, or nationality, or from more narrowly focused occupational and family roles. Our review elaborates on three ways in which social roles intersect with goal pursuit processes, with particular attention to how communal goals influence STEM pursuits. First, social roles influence goal selection, or what goals are prioritized generally and at a particular time. Second, beliefs about social roles can influence the kinds of roles that people shy away from or seek out. Third, occupying a particular social role can actually facilitate or impede goal progress. With regard to STEM pursuits, we demonstrate that communal goals are valued both generally by people and especially by women, and that consensual stereotypes describe STEM fields as less likely to afford communal goals than other occupational roles. However, emphasizing the communal aspects of STEM fields elicits greater positivity among communally-oriented people. Finally, we explore the ways in which STEM occupational roles are or might be enacted in communally-oriented ways. The goal congruity perspective thus can offer a unifying framework to integrate an understanding of the social structure – that is, roles and contexts – with the social cognition of the individual – that is, critical motivational and cognitive processes.

Navigating social roles in pursuit of important goals:

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A theoretical physicist describes mathematics as expressing and reinforcing the commonality among people, wherever they are (Tippett & Levin, 2008). A molecular biologist studies how bacteria communicate with each other (Bassler, 2009). The organization Code for America supports software engineers as they dedicate two years of their lives to program for the benefit of local communities (Code for America, 2012). Mathematicians help track the flow of oil to reduce the environmental devastation from the Gulf oil spill (Schiller, 2012). These are but a few of the ways in which people in science, technology, engineering, and mathematics (STEM) work with other people and use their skills to help individuals and communities. Yet, most people do not bring these kinds of examples to mind when they consider what STEM professionals do. Our point, simply put, is that if people did construe STEM as fulfilling these *communal goals* – of working with or helping others – STEM fields would be more attractive to a broader range of individuals. Moreover, STEM fields might particularly increase in attractiveness among people who particularly value communal goals.

Our exploration of communal goal processes in STEM decisions integrates research on goal pursuit processes with research on stereotyping and on social role occupancy. The goal congruity perspective can offer a unifying framework to understand how features of social roles intersect with individuals' goal pursuits. First, social roles influence goal selection, or what goals are prioritized generally and at a particular time. Second, beliefs about social roles can influence the kinds of roles that people shy away from or seek out. Third, occupying a particular social role can actually facilitate or impede goal progress.

Social Roles: Expectations and Realities

A social role is a set of shared expectations and realities that correspond with a particular social position (Biddle, 1979). This social position can stem from group membership in broad social categories, such as gender, ethnicity, or nationality, or it can be more narrowly focused, such as social roles related to occupation or family. An important part of previous definitions focuses on the beliefs that surround social roles, which might be shared broadly in a society (House, 1995). Gender roles are one example of social roles that include consensual beliefs about what men and women are like and should be like (Eagly, Wood, & Diekmann, 2000; Wood & Eagly, 2010). In addition to a focus on shared beliefs, our definition of social role includes recognition that social roles vary not only in belief but also in reality. For example, different social roles provide different opportunities for behavior. Roles vary in how much they provide power and status, access to financial resources, or give opportunities for freedom or

flexibility. Social roles can also offer different social environments (e.g., differences in both quantity and quality of social interaction) as well as physical environments (e.g., a classroom, a football field, a library). Thus, our perspective will examine how social roles intersect with goal pursuit processes, both in terms of how social roles are *perceived* and in terms of how these roles might be enacted in reality.

The goal congruity perspective extends the social role framework to understand not only how social roles produce psychological characteristics, but also how those psychological characteristics influence choices about social roles. We thus posit that social roles produce gender-differentiated goals, and that these goals then influence the kinds of work and family roles that women and men are attracted to or avoid. In particular, this review focuses on gender differences in communal goals and their implications for STEM careers.

Seeking Communal Goal Congruity

Previous research has delineated many variables that are critical to explaining women's underrepresentation in STEM fields, including gender differences in self-efficacy and differential encouragement for science and math pursuits. Recent reviews of the literature have concluded that explanations focusing solely on ability or prejudice fail to account fully for gender disparities in STEM, and a promising direction for future research is seeking to understand women's interests and lifestyle preferences (Ceci & Williams, 2010; Ceci, Williams, & Barnett, 2009; Cheryan, 2011; Ferriman, Lubinski, & Benbow, 2009). Consistent with these conclusions, our goal congruity perspective focuses on how the communal goals endorsed by women influence their career decisions. Our model generally adopts an expectancy-value framework (e.g., Eccles, 1994, 2007), in which social roles provide an opportunity structure that people navigate in order to maximize the attainment of their valued goals. In particular, our research focuses on how the value accorded to communal goals might be especially important in women's STEM decisions. The distinctive contribution of the goal congruity perspective is to posit that a critical difference between STEM careers and other fields is in beliefs about whether these fields allow the pursuit of communal goals, such as working with or helping others. From this perspective, women select out of STEM careers in part because these careers are thought to impede communal goals. These robust and consensual beliefs about goal affordances intersect with individuals' own valued goals to produce attitudes toward STEM. Because women tend to endorse communal goals more highly than men, women in particular may turn away from STEM and toward other fields.

Our use of the construct *affordances* both derives from and departs from Gibson's (1979) original articulation. Although the Gibsonian perspective emphasizes reality (i.e., action follows from what a particular object or environment physically affords), our application emphasizes both reality and

perception. In adapting this construct to understanding social roles, we focus both on the *perception* and on the *reality* of what actions are possible in a social role. There are two reasons underlying this emphasis on perceived affordances. First, social roles are broad constructs that can be enacted in a range of ways; thus, construals may vary about roles more flexibly than about specific objects. For example, the role of physician can be enacted in a more dominant or authoritarian style or in a more other-oriented, patient-centered style; the basic tasks of eliciting information from a patient and making a diagnosis can be accomplished either way. Meta-analysis shows that women tend to enact the physician role differently than do men, particularly in spending more time talking to patients (Roter, Hall, & Aoki, 2002). Second, given that decisions about social roles often are made with fairly little information about what role occupancy is *actually* like, these perceptions play a critical role in the unfolding process of social role selection. For example, as we will elaborate below, individuals' career decisions are the result of a culmination of experiences. The decision to enter into a STEM field might draw on one's own experiences in courses, but role entry decisions by necessity involve projection of what occupying a role is going to be like. We contend that an important aspect of these projections includes beliefs about what goals are likely to be fulfilled in the role, or perceived goal affordances.

I. Social Roles Influence Goal Selection

The social role framework posits that individuals develop and display those behaviors and psychological attributes that best help them to enact their roles successfully. In this section, we examine how social structures would lead to the prioritization of communal goals, both generally and for women in particular.

People Value Communal Goals

One of the reasons that communal goals are of particular interest is that communal goals and attributes are extremely highly valued. The human species is intensely social; our success in evolutionary terms is a direct result of our ability to cooperate in developing sophisticated agricultural, industrial, technological, economic, and political systems. This extensive cooperation requires and rewards being oriented to others, and this priority given to various forms of other-orientation is reflected in its primacy in a wide range of theories of human motivation. For example, the need to belong is posited as a universal need (Baumeister & Leary, 1995) and a core social motive (Fiske, 2004). Maslow's (1943) hierarchy of needs places communally-oriented needs of love, including affection and belongingness, just above safety, and current adaptations of the hierarchy of needs also posit affiliation as immediately above self-protection (Kenrick, Griskevicius, Neuberg, & Schaller, 2010). The values of universalism and benevolence likewise emerge across cultures (Schwartz, 1992; Schwartz & Boehnke,

2004): Universalism reflects the promotion of the welfare of people and nature generally, and benevolence reflects the promotion of the welfare of people with whom one has direct contact.

The value placed on communal goals is reflected in the highly positive evaluations accorded to individuals who display these other-oriented attributes. Considerable evidence demonstrates that warmth is a primary dimension of social judgment (e.g., Fiske, Cuddy, & Glick, 2007; Judd, James-Hawkins, Yzerbyt, & Kashima, 2005). For example, the other-oriented construct of morality – including traits such as fair, generous, helpful, honest, righteous, sincere, tolerant, and understanding – was found to be more important than competence in impression formation (Wojciszke, Bazinska, & Jaworski, 1998). In addition, both men and women who are described as communally-oriented are evaluated positively (Diekman, 2007).

Women Especially Endorse Communal Goals

Although communal goals are generally valued, research has also documented that they are particularly valued for women and by women. Because women predominate in caretaking roles in both the public and private spheres, traits related to other-orientation are central to the female gender role (Diekman & Eagly, 2008; Eagly et al., 2000). Moreover, the centrality of communal characteristics to women's self-descriptions as well as in gender norms has persisted despite widespread gender role change. Across different measures and outcomes, evidence shows that men and women have converged in their agentic attributes while remaining divergent in their communal attributes (see Eagly & Diekman, 2003, for a review). In self-reported personality and attitudes, women's higher levels of communion persist (Eagly, Diekman, Johannesen-Schmidt, & Koenig, 2004; Twenge, 1997). Moreover, the female gender role continues to emphasize communal attributes (Diekman & Goodfriend, 2006; Prentice & Carranza, 2002). Stereotypes of women include more positive evaluative content than stereotypes of men because of observers' positivity toward the communal attributes ascribed to women (Eagly & Mladinic, 1989; Eagly, Mladinic, & Otto, 1991).

Consistent with the idea that women particularly endorse communal goals are contemporary data showing that men and women diverge on endorsement of communal attributes. Primary data from our laboratory show that gender differences in goal endorsement emerge more extensively for communal goals than for agentic goals: Averaged across three studies (N=790), women endorsed communal goals more than men, $d = -.51$, whereas the sex difference for agentic goals was smaller, $d = .10$. Pohlmann (2001) found that when asked to name important goals, women more frequently named communal goals, whereas men more frequently named agentic goals. Similarly, women were more likely than men to list people-oriented work-related goals (Morgan, Isaac, & Sansone, 2001).

Likewise, empirical examinations of self-reported attributes consistently find that women more than men endorse traits related to communion, including tender-mindedness, $d=-.28$ (Costa, Terracciano, & McCrae, 2001), $d=-.97$ (Feingold, 1994), warmth ($d = -.23$; Costa et al., 2001), and both benevolent ($d=-.29$) and universalist values ($d=-.21$; Schwartz & Rubel, 2005). Across a wide variety of empirical demonstrations, women more than men are oriented to others, even though this value is held strongly by both sexes.

II. Occupational Roles Are Believed to Influence Goal Pursuit

Central to the goal congruity model are beliefs about whether certain social roles are going to enhance or impede their efforts to fulfill important goals. Given that communal goals are generally highly valued, beliefs about which social roles will serve these goals are important in predicting positivity toward particular roles. Consistent with an expectancy-value framework, these beliefs may be especially impactful in the decisions of those individuals who most highly value communal goals.

Content of Goal Affordance Stereotypes

Across different samples and different types of STEM careers, we have documented robust beliefs that STEM fields are perceived to impede communal goals, relative to other kinds of careers and to other goals (Diekman, Brown, Johnston, & Clark, 2010; Diekman, Clark, Johnston, Brown, & Steinberg, 2011). As shown in Figure 1, people estimate that STEM fields will be less likely to afford communal goals than female-stereotypic careers or than other male-stereotypic careers such as law, business, or medicine. Although observers also report that STEM careers are somewhat less likely to afford agentic goals, the larger difference is in the perceived affordance of communal goals. STEM fields, broadly speaking, are stereotyped as being unlikely to involve working with or helping others.

These goal affordance stereotypes emerge among both men and women, among people of different ages, and among STEM majors and nonmajors. Among each of these subgroups, the perception that STEM fields are less likely than other fields to afford communal goals appears. In addition, measures of implicit associations that directly compare the ease of pairing *communal* versus *noncommunal* words with *science* and *medicine* find that science is relatively less likely to be paired with communal constructs such as *together* or *warmth* (Diekman et al., 2011). Thus across different demographic groups and across both explicit and implicit measures, STEM fields are disassociated from communal goals.

Goal Affordances Predict Positivity

According to the goal congruity model, beliefs about whether STEM fields will afford communal goals are an important determinant of attraction to these careers. Using both correlational and experimental methodologies, we have tested and found support for this prediction.

Given the robust stereotypes that STEM fields impede communal goal pursuits, individuals who most value communal goals should be least attracted to these fields. An initial study (Diekman et al., 2010) supported this idea. In a fairly large sample of undergraduates who represented a range of majors, we first demonstrated that goal affordance stereotypes described STEM fields as impeding communal goals, as described above. We then found, as predicted, that individuals' communal goal orientation negatively predicted their interest in STEM fields (see Figure 2). Moreover, these individual differences in communal goal orientation mediated the sex difference in STEM interest. Men were more interested in STEM careers than were women, but taking into account differences in communal goal orientation partially explained this effect.

To establish the causal effect of perceived affordances, we turned to experimental methods that directly manipulated the presence of communal tasks and activities. In this experiment (Diekman et al., 2011, Exp. 3), participants read about a day in the life of an entry-level scientist, and they were randomly assigned to read about a scientist whose tasks involved working with and helping others, or a scientist who completed the same tasks without working with or helping others. As predicted, individuals in the communal framing condition were more likely to believe that a science career would afford communal goals, and women in particular more positive toward pursuing a science career (see Figure 3). Moreover, consistent with the goal congruity perspective, individuals who most highly valued communal goals showed this pattern most strongly.

Using Communal Goal Affordances to Recruit Women into STEM

Some STEM departments have initiated programs that heighten the salience of communal goals to potential and current students. For example, the National Academy of Engineering developed a campaign that included redesigning recruitment flyers and postcards for engineering events were redesigned to show people interacting with technology rather than technology alone, and to include taglines highlighting the social impact of engineers (Yowell & Sullivan, 2011). The result of this initiative was quadrupled attendance at a program to introduce high-school girls to engineering, as well as an increase from 19% to 24% in the enrollment of women engineering students.

Research in our laboratory more directly assesses the goal congruity processes involved in such recruitment efforts. For example, one way of recruiting into STEM may be to expose children to information about how STEM careers involve collaboration or helping others. In a visit to our lab,

female high school students viewed a short video about a team of engineers working together to create clean drinking water. A pre- and post-test design revealed that after watching the video, the students believed that engineering affords more communal goals. In addition, their belief that engineering afforded communal goals was positively associated with their willingness to attend an engineering camp or work in a project like the one depicted in the video. Even brief interventions about how STEM fulfills communal goals may thus help increase interest in STEM among school-age children.

Media messages about STEM fields might be an effective way to change stereotypic beliefs about STEM fields. The STEM field in particular might suffer from a lack of knowledge about what STEM practitioners actually do in their day-to-day work (Committee on Public Understanding of Engineering Messages, 2008). At low levels of experience, stereotypes are greatly influenced by exposure to particular group exemplars (e.g., Sherman, 1996), leading media representations of STEM practitioners to be an important source of information about the goals afforded by STEM. In a content analysis of scientist characters in television shows popular among middle school-age children, the attribute of caring was found relatively infrequently compared with other attributes such as dominant and respected (Long et al., 2010). Evidence from our laboratory shows that even brief exposure to verbal and visual information associating STEM fields with communal goals can lead to changes in beliefs: Individuals who were exposed to information about STEM careers emphasizing the collaborative and altruistic aspects of those careers reported increased communal goal affordances and interest (Steinberg & Diekmann, 2012). Even brief media exposure in a laboratory may thus contribute to beliefs about goal what STEM practitioners do.

III. Social Roles Structure Goal Pursuit Processes

The third way in which social roles and goal pursuit can intersect is that occupancy of a social role can actually influence what goals are pursued, and if these goals are pursued successfully. We thus turn from examining *perceived* opportunities for goal pursuit to examining the more challenging question of *actual* opportunities for goal pursuit. That is, in what ways might STEM fields afford or fail to afford communal goals through access to resources and opportunities to work with or help others?

We first offer the large and important caveat that drawing conclusions about large groups of occupations, much like large social categories of people, can be generalizations at best. As with stereotypes of social groups (see McCauley, Jussim, & Lee, 1995, for a review), beliefs about occupational fields are always going to have some degree of inaccuracy when the global stereotype is applied to a particular job, a particular major, or a particular organization. Our purpose here is thus not

to answer the question of whether STEM fields are globally more or less likely to afford communal goals, which would require the careful and systematic study of communal pursuit opportunities and actions across a range of careers. Instead, our purpose here is to draw on the previous literature to understand the ways in which STEM roles are or might be enacted to afford communal goal pursuit.

Considering the question of whether some STEM fields actually do inhibit communal goal pursuits is a critical one. If the perceptions of goal affordances are highly accurate, then one implication might be that recruiting communally-oriented individuals into STEM fields is ultimately destined for failure because STEM fields are inherently noncommunal. Put another way, perhaps the reality of some social roles is that they involve more solitary work, more competition, or more self-promotion than others. Certainly such variation across social roles exists, as we noted earlier; equally as certain is that variation *within* social roles exists. The variation across existing STEM environments might thus be extremely informative: Some local contexts involve higher degrees of collaboration, mentorship, or contact with beneficiaries than others do. The implication of our research is not that STEM fields “should” be practiced in a different way, but that highlighting the communal ways in which they are already practiced might attract a different source of talent in STEM.

One initial observation is that communal goals might be afforded and fulfilled in different ways, and different career fields or specific occupations might fulfill different types of communal goals. Two dimensions of communal goals appear particularly important. First, does the work fulfill the goal to *work with others*, or does the work fulfill the goal to *help others*? Second, does the work fulfill this goal *proximally* – that is the beneficiary or collaborator is in direct contact – or *distally* – the beneficiary or collaborator is indirect or abstract? As can be seen in Table 1, different aspects of scientific or technological work might fall into each of the quadrants of this categorization.

With this typology, research can identify the aspects of communal goals that are or might be pursued effectively within certain environments. Fulfilling the communal goal of helping others might be achieved proximally by offering opportunities to mentor students, whereas the same goal might be achieved distally by offering reminders of the ultimate beneficiaries of one’s research or design efforts. Consistent with Schwarz’s work (Schwartz, 1992; Schwartz & Boehnke, 2004), benevolent values (i.e., helping directly) and universalist values (i.e., helping indirectly or broadly) certainly have in common the dimension of helping, but are distinct in the dimension of proximal or distal efforts.

To those who question whether communal goals have a useful place in the STEM disciplines, we turn to empirical data. Studies of scientific productivity have found that collaboration positively predicts scientists’ output (e.g., articles, books; Landry, Traore, & Godin, 1996; Lee & Bozeman, 2005). Moreover,

as we noted earlier, prosocial motivations are generally important to people, and individuals whose jobs allow them closer contact with the beneficiaries of their help report greater motivation and exhibit greater persistence in their work (Grant, 2007; Grant et al., 2007). Finally, many STEM fields have at their core a deep purpose of building a collective knowledge base that will ultimately benefit society. For example, Thomas Edison noted: “Through all the years of experimenting and research, I never once made a discovery. I start where the last man [*sic*] left off” (Untermeyer, 1955, p. 227). The critical task for STEM fields who wish to recruit a broader range of individuals may thus be to clarify how the proximal role tasks (e.g., everyday actions) align with or produce the distal communal outcomes (e.g., benefitting society) that are the bedrock of many of these fields.

Interplay Between Perceived and Real Goal Affordances

For conceptual clarity, we have drawn a sharp distinction between perceptions of communal goal affordances and the reality of communal goal affordances. However, a long history of research within social psychology suggests that these beliefs and realities will inform each other.

Experiences influence beliefs. As noted earlier, the experiences that people have in STEM activities provide an important source of their goal affordance beliefs. Personal experience includes an individual's current and past experiences with STEM in formal settings, such as academic courses or in informal settings such as clubs. Our research (Steinberg & Diekman, in preparation) found that individuals' reported communal quality of experience with mathematics and science, including working on group projects or being mentored, predicted more communal goal affordances and interest in STEM. Moreover, the communal quality of their experience predicted beliefs about goal affordances in STEM even when taking into account the quantity of experience in mathematics and science (Steinberg & Diekman, 2012). Cross-cultural evidence also suggests that cultural factors might play a role in providing different experiences, which in turn shape goal affordance beliefs. For example, individuals in China reported more communal experience than those in the U.S.; they reported higher levels of group projects, mentoring, and volunteering in their science and mathematics courses. In turn, this difference in communal quality of experience, explained U.S.-China differences in STEM interest (Brown, Steinberg, Lu, & Diekman, in preparation). The type of experience therefore has consequences for the content of goal affordance stereotypes and for interest in STEM.

Beliefs influence experiences. One of the major insights of social psychology has been to illustrate empirically how beliefs can shape experiences (Olson, Roese, & Zanna, 1996). A full understanding of communal goal processes in STEM thus needs to investigate not only how STEM experiences shape perceived goal affordances, but how these very perceptions can influence the reality

of STEM experience. The self-fulfilling prophecy states that beliefs can evoke behaviors that confirm those very beliefs (Geis, 1993; Jussim, 1986). A great deal of experimental research has supported the prediction that mere beliefs can produce stereotype-consistent behaviors, regardless of the personal characteristics of target of the beliefs (e.g., Word, Zanna, & Cooper, 1974). For example, individuals distribute tasks differently based on whether they think they are interacting with a man or a woman, regardless of the other person's actual sex (Hollingshead & Fraidin, 2003; Skrypnik & Snyder, 1982). Likewise, individuals who believe that they are interacting with physically attractive people (who are stereotyped as sociable) actually elicit behavior that is rated as friendlier by independent judges (Snyder, Tanke, & Berscheid, 1977).

The effects of self-fulfilling prophecy are due to *cognitive confirmation* as well as *behavioral confirmation*. Cognitive confirmation reflects that the observer tends to attend to, encode, remember, and interpret information in light of existing cognitive structures (e.g., Darley & Gross, 1983). For example, the belief that engineering is a solo endeavor might lead one to focus on the solitary work that engineers do, rather than their many collaborative projects. *Behavioral confirmation* reflects that when an individual interacts with others, he or she does so in light of existing beliefs, and those mere beliefs can elicit behaviors that confirm the initial perception. For example, the belief that engineers are not interested in other people may lead an individual to refrain from initiating social interactions with an engineer. In the end, the initial belief – that engineering is a solo endeavor – is confirmed both cognitively and behaviorally.

Emerging Questions

The goal congruity perspective provides a framework to bring together different literatures to understand the important decisions that enter into the selection of one's social roles. The integration of these different literatures allows for new and different questions to be pursued; in this section, we briefly outline some of these.

Contextual Effects on Goal Pursuit

The initial questions within the goal pursuit literature largely focused on individual methods of goal pursuit and self-regulation (e.g., Carver & Scheier, 1998); consideration of the social roles that an individual occupies or seeks to occupy can provide insight into contextual effects on goal pursuit processes. Given the increasing emphasis on automaticity, research has turned to how features of both the social and the physical context can influence goal pursuit. For example, close others can prime certain goals, as well as increase persistence toward and performance of those goals (Shah, 2003a,

2003b). Likewise, being in a physical environment that is closely associated with certain norms can activate normative behaviors (e.g., being quiet in a library; Aarts & Dijksterhuis, 2003).

The evidence that physical and social environments influence goal pursuit processes is clear; what the goal congruity model seeks to establish is how goal pursuit processes influence the entry into and persistence in certain physical and social environments. The question of how people select social roles, and the particular ways in which both automatic and deliberate processes enter into these decisions, is thus a critical question for future research. Understanding how social roles can meet multiple goals, or encompass the principle of multifinality (Kruglanski et al., 2002; Shah, Kruglanski, & Friedman, 2003) can help social psychologists understand a range of important issues. Particularly interesting from a social psychological perspective is the extent to which the pursuit of multiple goals is bounded by reality (i.e., the social role has constraints that directly impede goal pursuit) or that are bounded by perception (i.e., the social role carries with it perceived constraints or expectations). Social roles often can be enacted flexibly (e.g., Roter et al., 2002), and thus the ability to find goal-consistent activities within the constraints of one's social role is a viable strategy for more effective goal pursuit.

Goal Congruity and Belongingness

The goal congruity perspective can also speak to the growing literature on the role of belongingness in decisions to persist in STEM fields. For those who are on the vanguard of their social group in entering a particular social role, questions about whether they fit are of paramount importance (Good, Rattan, & Dweck, 2012; Steele, Spencer, & Aronson, 2002). We suggest that perceived goal incongruity is another cue to belongingness: Individuals get a sense of whether a field or organization is one where they fit in part by getting a sense of the goals that are valued and fulfilled in that setting and the goals being pursued by others in the field. Individuals whose goals are incongruous with the social role are thus likely to feel a lower sense of belonging with others in that role, even if their social group membership is well represented.

Moreover, communal goal incongruity might have greater impact on belonging than other forms of goal incongruity, given that individuals who are highly communally-oriented prioritize connection to other people. Thus, highly valuing communal goals, but sensing that the local environment does not, signals a lack of belonging both because of a goal mismatch and because of a general lack of communion.

Moving Beyond Gender Differences

A key point of the communal goal congruity perspective on women's STEM pursuits has been to understand the psychological mechanisms that underlie the gender differences in STEM interest. To

date, the evidence has been clear that communal goal processes are certainly one of these underlying mechanisms; mediational models show that differences in communal goal endorsement underlie gender differences in STEM interest (Diekman et al., 2010). This focus on communal goal pursuit processes as underlying group differences might thus provide opportunities to apply this perspective more broadly. One example is that differences in cultural differences in STEM interest – that is, between the U.S. and India or China – have been shown to be at least partially accounted for by cultural differences in the communal goals that are afforded by STEM (Brown et al., in preparation). Understanding how STEM fields might emphasize the communal goals that they already incorporate might thus open the doors more widely to a range of communally-oriented individuals who might have the capability and talent for STEM work but do not perceive such work as fulfilling their valued goals. This broader applicability might be particularly important because the challenge facing the STEM fields is not only to recruit more talented women, but to recruit more talented people generally.

Conclusions

It is our hope that the framework elaborated here provides new impetus to integrate an understanding of the social structure – that is, roles and contexts – with the social cognition of the individual – that is, critical motivational and cognitive processes. As illustrated here, particular role and goal intersections can yield new insights to societal problems: In particular, understanding how STEM fields are perceived to impede communal goals offers new strategies for increasing participation not only among women, but among communally-oriented people generally.

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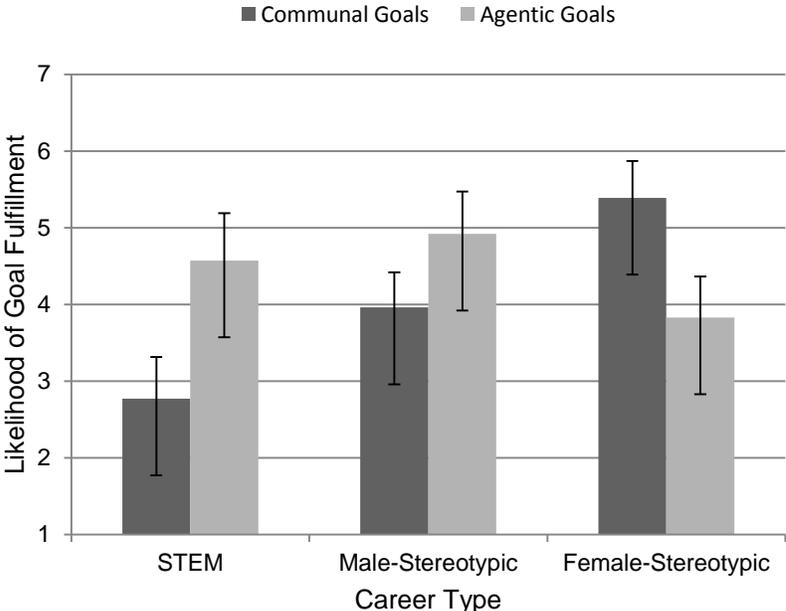
Table 1

Typology of Communal Goal Pursuits

Means of goal pursuit	Type of communal goal	
	Helping	Collaboration
Proximal	Provide medical aid to person in need	Work in a lab setting with others
	Mentor a student in chemistry	Communicate with project team daily
Distal	Work on research that improves food safety	Participate in broader scientific community
	Conduct chemistry research that leads to better medical treatments	Contribute to long-term knowledge building

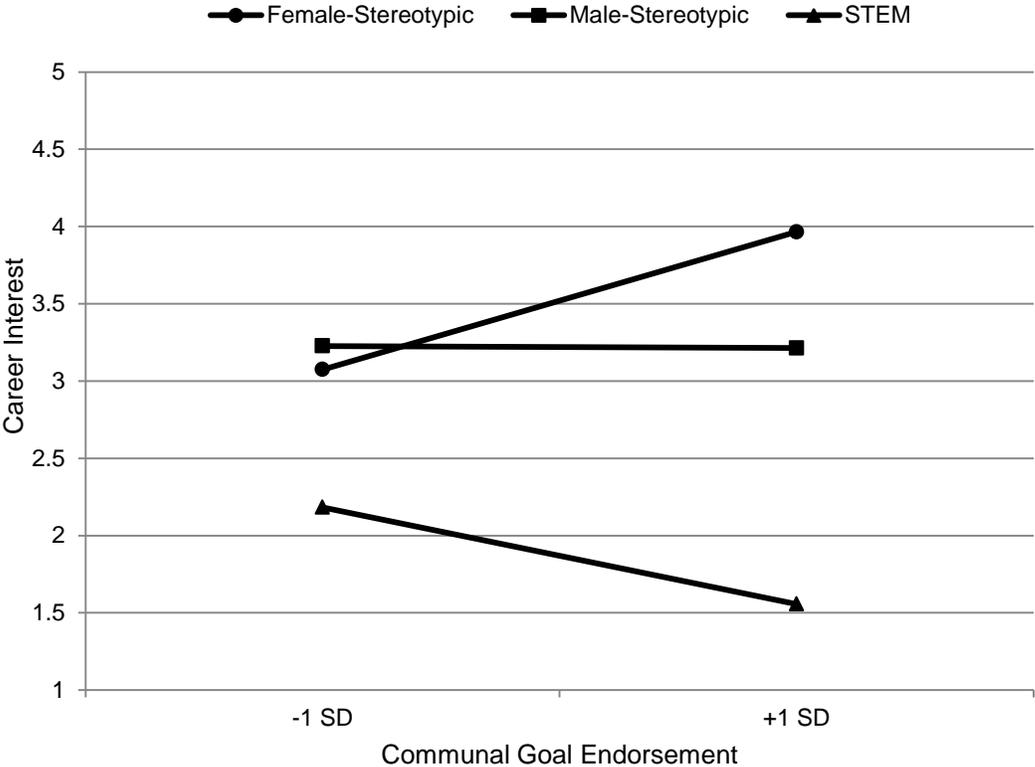
Figure 1

STEM Careers Are Perceived Less Likely to Afford Communal Goals



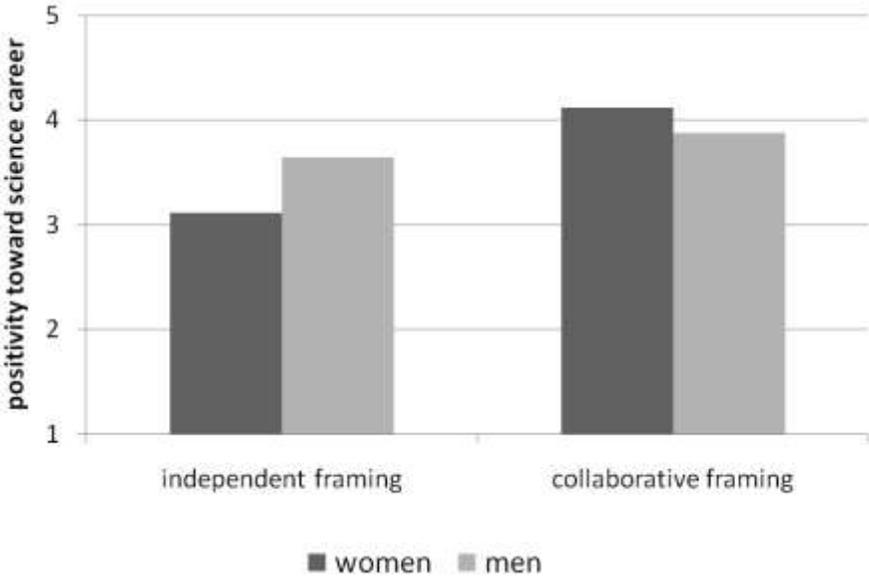
Note. Originally presented in Diekmann et al. (2010).

Figure 2
Effects of Communal Goal Endorsement on Interest in Careers



Note. Originally presented in Diekmann et al. (2010).

Figure 3
Effects of Communally-Oriented Framing on Positivity Toward a Science Career



Note. Originally presented in Diekmann et al. (2011).